PROJECT ADMINISTRATION DATA SHEET

CORRECTED COPY

[X] ORIGINAL [ ] REVISION NO. _____

Project No. G-35-618 (Continuation of G-35-627) DATE 12/30/81

Project Director: Dr. L. T. Long School/~~Lab~~ Geophysical Sciences

Sponsor: Georgia Power Company

Type Agreement: Purchase Order RMP-15 .

Award Period: From 9/15/81 To Open 9/14/85 (Performance) _____ (Reports)

Sponsor Amount: $4,000 (Through 9/14/82) Contracted through:

Cost Sharing: None GTRI/~~GIT~~

Title: Seismic Monitoring Near the Rocky Mountain Project Georgia

ADMINISTRATIVE DATA OCA Contact William F. Brown x 4820

1) Sponsor Technical Contact:

~~Ronald Wood~~

Mr. Major H. Thompson
Georgia Power Company
P. O. Box 4545

2) Sponsor Admin/Contractual Matters:

~~Ronald Wood~~

Georgia Power Company
P. O. Box 4545
Atlanta, GA 30302
(404) 526-7136

Defense Priority Rating: None Security Classification: None

RESTRICTIONS

See Attached _____ Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval – Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of $500 or 125% of approved proposal budget category.

Equipment: Title vests with None proposed.

COMMENTS:

This action establishes new project G-35-618 to add $4,000 annual increment to basic P. O. for the period 9/15/81 through 9/14/82. Revised total value of P. O. (including amount of G-35-627) is ~~$49,731~~ $53,731. Total cost sharing budget (G-35-365) established with G-35-627 remains unchanged at $750.

COPIES TO:

Administrative Coordinator
Research Property Management
Accounting
Procurement, EES Supply Services
Research Security Services
~~Reports Coordinator (OCA)~~
Legal Services (OCA)
Library
EES Public Relations (2)
Computer Input
~~Project File~~
Other _____

FORM OCA 2-81

ORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date 9/19/86

ct No. G-35-618 School/lab Geo. Sci

des Subproject No.(s) N/A

ct Director(s) L. T. Long ~~GTRC~~/ GIT

sor Georgia Power Company

Seismic Monitoring Near the Rocky Mountain Project Georgia

tive Completion Date: 9/14/85 (Performance) _____ (Reports)

/Contract Closeout Actions Remaining:

- ☐ None
- ☒ XX Final Invoice or Final Fiscal Report
- ☐ Closing Documents
- ☐ Final Report of Inventions
- ☐ Govt. Property Inventory & Related Certificate
- ☐ Classified Material Certificate
- ☐ Other _____

nues Project No. G-35-627 Continued by Project No. _____

ES TO:

t Director
ch Administrative Network
ch Property Management
nting
ement/GTRI Supply Services
ch Security Services
s Coordinator (OCA)
Services

Library
GTRC
Research Communications (2)
Project File
Other I. Newton
A. Jones
R. Embry

OCA 69.285

G-35-618

22 September 1982

Mr. Major H. Thompson
Georgia Power Company
P. O. Box 4545
Atlanta, GA 30302

Subject: Annual reports covering periods of
14 September 1980 to 13 September 1981 and
14 September 1981 to 13 September 1982

Re: Seismic monitoring near Rocky Mountain, Georgia

Dear Sirs:

During the reporting period of 14 September 1980 to 13 September 1982, the Rocky Mountain area continued to be monitored. As of this report, no natural seismic activity has been detected within the project area.

The coverage percent of the three stations in operation are shown in Tables I and II. The primary cause of downtime was equipment failure both at station locations and at Plant Hammond. Periodic maintenance was necessary to keep the system operational.

Regional events recorded by the Rocky Mountain seismic net are shown in Tables III and IV. The closest (possible) earthquake occurred approximately 33 kilometers to the northeast near Calhoun, Georgia. Local and regional blasts are routinely recorded.

Respectfully submitted,

Leland T. Long

Enclosures

APJ:LTL:pr

Table I. Coverage Percent (%)
14 September 1980 to 13 September 1981

Month	TVG	SMG	RMG	1 Station Coverage*
September 14-30, 1980	78.6	---	42.9	95.8
October 1980	44.5	---	27.3	71.6
November 1980	86.5	---	26.8	89.7
December 1980	48.1	---	43.3	51.3
January 1981	72.8	---	---	72.8
February 1981	59.7	---	44.9	71.6
March 1981	75.1	66.3	39.2	82.8
April 1981	78.6	13.3	32.9	82.2
May 1981	99.1	---	20.7	99.5
June 1981	---	---	80.3	80.3
July 1981	---	---	79.3	79.3
August 1981	---	---	39.1	39.1
September 1-13, 1981	---	---	8.3	8.3
Average Coverage Percent for Year	50.7	6.6	39.0	76.2

* Percentage of time at least one station recorded. 2 or more possible when drum space allowed it.

Table II. Coverage Percent (%)
14 September 1981 to 13 September 1982

Month	TVG	SMG	RMG	1 Station Coverage*
September 14-30, 1981	---	---	27.2	27.2
October 1981	---	---	64.4	64.4
November 1981	---	---	---	---
December 1981	---	---	---	---
January 1982	---	---	---	---
February 1982	6.1	---	2.5	8.6
March 1982	11.4	10.7	13.3	26.4
April 1982	12.2	12.6	5.6	26.0
May 1982	91.1	21.9	88.7	94.8
June 1982	95.7	---	23.6	96.5
July 1982	82.1	---	---	82.1
August 1982	97.2	---	---	97.2
September 1-13, 1982	75.3	---	---	75.3
Average Coverage Percent for Year	35.7	3.7	17.8	51.6

* Percentage of time at least one station recorded. 2 or more possible when drum space allowed it.

Table III.

Date	U.T.C.	Location
27 November 1980	18:37:39.5	S.E. Tennessee
2 December 1980	09:00:28.0	Brandenmoore, TN
12 January 1981	08:24:59	Calhoun, GA
3 February 1981	14:27:09.7	Tellico Plains, TN (foreshocks)
15 February 1981	13:46:38	Melvin, AL
25 March 1981	17:00:53.0	10 km south of Murfreesboro, TN
2 April 1981	06:32:37.9	10 km SW of Athens, TN
4 April 1981	09:19:37.8	Lake Sinclair Area, GA
9 April 1981	07:10:32.2	Rutherfordton, NC
4 May 1981	21:21:52.5	Henderson, NC
7 May 1981	09:58:44.0	Cullman, AL
7 August 1981	11:53:40.7	Brazil, TN

Table IV.

Date	U.T.C.	Location
28 September 1981	18:03:34.03	Alabama-Georgia Border
5 May 1982	15:28:16.11	Sweetwater, TN
11 May 1982	01:21:51.78	Ringgold, GA
12 May 1982	04:58:02.66	Haleyville, AL
25 May 1982	07:42:42.45	Chattanooga, TN
30 May 1982	07:12:00.76	Sweetwater, TN
17 June 1982	21:09:37.08	Servilla, TN
5 September 1982	10:11:09.4	Reliance, TN

Georgia Institute of Technology
A UNIT OF THE UNIVERSITY SYSTEM OF GEORGIA
ATLANTA, GEORGIA 30332
SCHOOL OF GEOPHYSICAL SCIENCES
404/894-3893

1 November 1983

Mr. Major H. Thompson
Georgia Power Company
P. O. Box 4545
Atlanta, GA 30302

Subject: Annual Report covering the period of
14 September 1982 to 13 September 1983

Re: Seismic Monitoring near Rocky Mountain, Georgia

Dear Sirs:

During the reporting period of 14 September 1982 to 13 September 1983, the Rocky Mountain area continued to be monitored. As of this report, no natural seismic activity has been detected within the project area.

The percent of total time that the three stations were in operation is shown in Table I. The primary cause of downtime was equipment failure both at station locations and at Plant Hammond. Periodic maintenance was necessary to keep the system operational.

Regional events recorded by the Rocky Mountain seismic net are shown in Table II. The closest (possible) earthquake occurred approximately 55 kilometers to the north near Trenton, Georgia. Local and regional blasts are routinely recorded. As a combined effort for the many stations and multiple sponsors that support the seismic net, we are now generating a network bulletin. The bulletins that cover this report period are attached.

Respectfully submitted,

Leland T. Long

Enclosures

RP:LTL:pr

Table I. Percent (%) of Time for which Data were Recorded during the Period of 14 September 1982 to 13 September 1983.

Month	TVG	SMG	RMG	Percent of Time Covered by One or More Stations
September 14-30, 1982	94.1	----	----	94.1
October 1982	54.8	----	----	54.8
November 1982	70.0	----	17.2	83.3
December 1982	96.8	----	3.2	97.3
January 1983	100.0	----	----	100.0
February 1983	7.1	----	----	7.1
March 1983	----	----	----	----
April 1983	13.3	----	----	13.3
May 1983	92.7	----	----	92.7
June 1983	94.2	----	2.0	95.0
July 1983	100.0	----	98.4	100.0
August 1983	94.9	----	30.0	100.0
September 1-13, 1983	98.1	----	38.5	98.1
Average Coverage Percent for Year	68.3	-0-	16.3	69.9

Note: TVG is the best site for recording and is preferred for data analysis. SMG has operated continuously in the field but has not been recorded because of difficulties with the RF relay at RMG.

Table II. Regional Seismic Events
Recorded on the Rock Mountain Net.

Date	U.T.C.	Location
24 September 1982	21:57:42.61	20 m SW of Knoxville
24 September 1982	22:19:16.46	Near Madisonville, TN
14 November 1982	10:31:59.10	Greenville, TN, area
23 November 1982	04:51:00.2	Waldenridge, TN
08 December 1982	23:36:56.31	Macon, GA
11 December 1982	00:25:10.38	Macon, GA
14 December 1982	06:35:09.58	Near Tellico Plains, TN
15 December 1982	02:27:59.36	N. of Greenback, TN
21 December 1982	05:30:46.19	Macon, GA
05 January 1983	23:05:56.50	Gold Mine, AL
08 January 1983	22:30:37.24	Trenton, GA
16 January 1983	19:28:13.87	Macon, GA
17 January 1983	02:06:06:93	Macon, GA
17 January 1983	03:34:20.27	Macon, GA
27 January 1983	22:09:33.31	Strawberry Plains, TN
29 January 1983	04:55:37.81	Macon, GA
29 January 1983	05:04:21.47	Macon, GA
31 January 1983	23:04:08.55	AL, GA, TN border
26 May 1983	12:30:01.99	Greenback, TN
30 May 1983	07:14:05.95	Quitman, MS
02 July 1983	06:46:28.86	Near Seneca, SC
07 July 1983	07:06:42.86	Greenback, TN
08 July 1983	19:29:05.47	Tellico Plains, TN
15 July 1983	19:32:56.65	N. of Ducktown, TN
28 August 1983	10:44:03.04	S. of Florence, AL

E-35-618

Georgia Institute of Technology
A UNIT OF THE UNIVERSITY SYSTEM OF GEORGIA
ATLANTA, GEORGIA 30332
SCHOOL OF GEOPHYSICAL SCIENCES
404/894-3893

May 30, 1986

Mr. Major H. Thompson
Georgia Power Company
P. O. Box 4545

Subject: Annual Report covering the period of
15 September 1984 to 14 September 1985

Re: Seismic Monitoring near Rocky Mountain, Georgia

Dear Sirs:

During the reporting period of 15 September 1984 to 14 September 1985, the Rocky Mountain area was monitored by station TVG. Station TVG has been maintained as part of the Georgia Tech seismic network which covers Alabama, southeastern Tennessee and northwestern Georgia. The quarterly network reports covering the period from 1 October 1984 to 31 March 1986 are attached. They describe events recorded, station coverage, and other aspects of the seismic net recording.

Stations RMG and SMG have been taken down. Equipment from these sites has been used to maintain station TVG and to install a monitoring station at Dalton, Georgia. Only the Texas Valley, Georgia, station (TVG) has been maintained in operation in the imediate vicinity of the Rocky Mountain Project. Radio signals from this site are transmitted to the Plant Hammond for relay to Georgia Tech. Recently, a trap was installed at Plant Hammond to prevent desensitation of the TVG radio receiver by the in-plant VHF radio system. The power at the TVG transmitter site will be increased from 250mw to 1.0 watt, which is still less than the authorized power level of 2.0 watts. This increase should improve the signal to noise ratio which is degraded by signal absorption from foliage during the summer months.

The support of The Georgia Power Company for the seismic monitoring of northwest Georgia has been greatly appreciated. We look forward to further cooperation with the Georgia Power Company in maintaining Station TVG as part of Georgia Tech's monitoring of the seismicity of the southeastern United States.

Respectfully submitted,

Leland Timothy Long

Enclosures

GEORGIA INSTITUTE OF TECHNOLOGY

QUARTERLY EARTHQUAKE BULLETIN

1 October 1984 - 31 December 1984

By

Leland Timothy Long, Karl-Heinz Zelt, Judy A. Demere,

Jeih-San Liow, Robert M. Duckworth, An Tie,

Russell L. Propes, and Mitchell S. Craig

School of Geophysical Sciences

Earth Sciences Division

Supported by:

Alabama Geological Survey
(through contract with U.S. Nuclear Regulatory Commission)

Georgia Power Company

U.S. Army Corps of Engineers
(Savannah District)

Tennessee Valley Authority

U.S. Army Corps of Engineers
(Mobile District)

QUARTERLY EARTHQUAKE BULLETIN

1 October 1984 - 31 December 1984

The information presented in this bulletin includes the origin times, magnitudes, hypocentral coordinates and their precision, and the arrival times of selected phases for local earthquakes recorded by seismic stations maintained by Georgia Tech, School of Geophysical Sciences.

The network consists of 24 seismic stations located in Alabama, southeast Tennessee, Georgia, and South Carolina monitored by the School of Geophysical Sciences at Georgia Tech. Station coverage for the operating stations are given in Table 1. Additional seismogram readings were obtained from stations operated by the Tennessee Valley Authority and the Tennessee Earthquake Information Center. The coordinates of the stations used in locating the events are given in Table 2. A map of the seismic stations maintained by Georgia Tech is given in Figure 1. Bollinger and Mathena (1983) describe the instrumentation of the seismic network and magnitude threshold.

The events are located using a computer program with techniques similar to those used in HYPO71 but is more flexible in assigning weights and utilizing phases.

Magnitudes are defined by their duration according to the equation:

$$m_b(Lg)_{Dur} = -3.45 + 2.85 \log_{10} T ,$$

where T is the mean signal duration in seconds (from Bollinger et al., 1984). A map showing the epicenters can be seen in Figure 2 and is followed by data sheets containing information and individual events that occurred during the quarter.

References

Bollinger, G. A., and E. Mathena (1983). Seismicity of the southeastern United States, Southeastern U.S. Network Bulletin, 11, May 1983.

Bollinger, G. A., M. C.Chapman, and M. S. Sibol (1984). Virginia Regional Seismic Network, 77-134-27, June 1984, Dept. of Geological Sciences--Extension Division, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061.

Table 1. Station Coverage, October 1 - December 31, 1984.

Station	Percent Coverage (%)	Station	Percent Coverage (%)
BKA	87	IVA	53
HGA	48	BEV	70
HVA	95	LDV	44
OCA	99	CHF	20
TSA	52	CH6	98
TDA	95	CH5	41
MLA	97	EP1	Down
TLT	45		
RCT	64		
RHT	56		
DCT	40		
CBT(Z)	90		
CBT(NS)	82		
CBT(EW)	58		
TVG	56		
CDG	71		
CRG	20 (From October 1 to November 30)		
DALG	24 (From December 1 to December 31)		

Note: 1. The coverage of CBT(NS) and CBT(EW) is less than that of CBT(Z) because only the vertical component is recorded continuously. However, the horizontal components are recorded on digital event recorders.

2. CRG has been removed from Carter's Dam because the site is being commercially developed. The instruments from CRG were installed near Dalton, Georgia, as a new station DALG on December 1, 1984.

Table 2. Coodinates of stations used in locating the events in this report.

Station	Latitude	Longitude	Elevation (km)
BBG	34.874	83.811	1.355
BEV	34.0893	82.7334	.158
BHT	35.847	84.945	.826
BRB(C)	35.739	82.286	1.976
CBT	35.5394	84.4206	.3566
CCR(T)	35.466	84.054	.940
CPO	35.5948	85.5704	.574
CSP(T)	35.761	83.824	.335
COT(N)	35.7842	86.9373	.320
CH6	33.8938	82.5291	.130
DCT	35.0542	84.4194	.5075
ETT	35.326	84.455	.588
GBT(N)	35.666	84.211	.326
GFM	36.111	81.807	1.726
GOG*	34.7743	85.2123	.320
HFG*	34.7948	85.2401	.2712
HGA	34.2602	85.8464	.3840
HVA	34.0264	86.7692	.195
LCA(L)	34.5225	85.6302	.544
LMT(N)	35.8868	83.4098	.610
MSA(L)	34.8467	86.6735	.260
OCA	34.6138	86.4352	.2499
ONT(N)	36.4815	84.4433	.635
ORT	35.9095	84.3048	.370
PKN(C)	36.046	81.158	.785
RCT	35.3453	84.6613	.265
RHT	35.0781	84.8825	.2987
SLT(N)	36.443	82.121	1.280
SWT(N)	35.3002	86.0762	.305
TDA	33.5417	86.0247	.1814
TKL	35.658	83.774	.350
TLT	35.3012	84.2833	.512
TVG	34.3771	85.3023	.3231

* TEIC Temporory stations (GOGT and HFGT), October 1984.

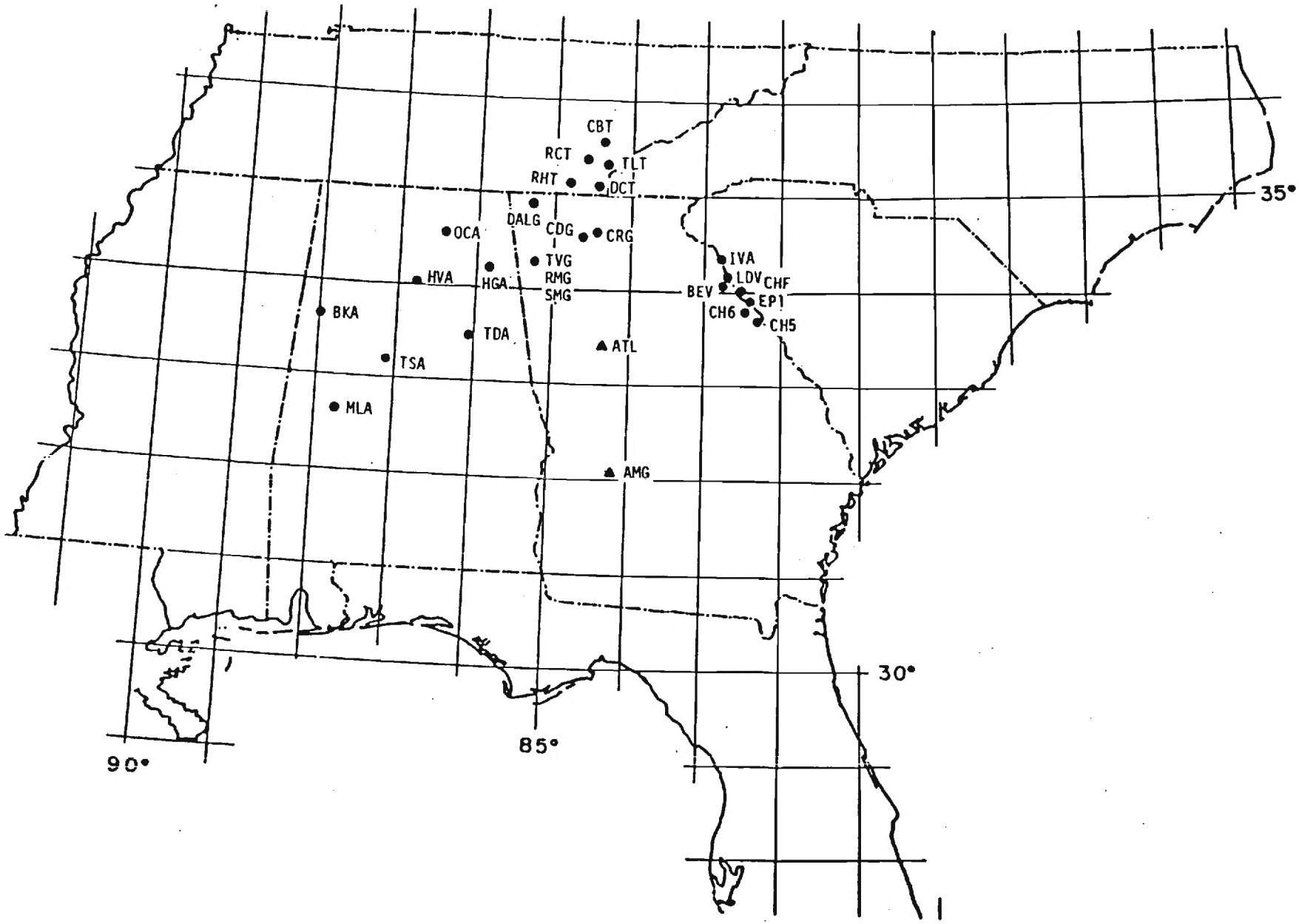

Figure 1. Seismic stations maintained by Georgia Tech as of December 1984.

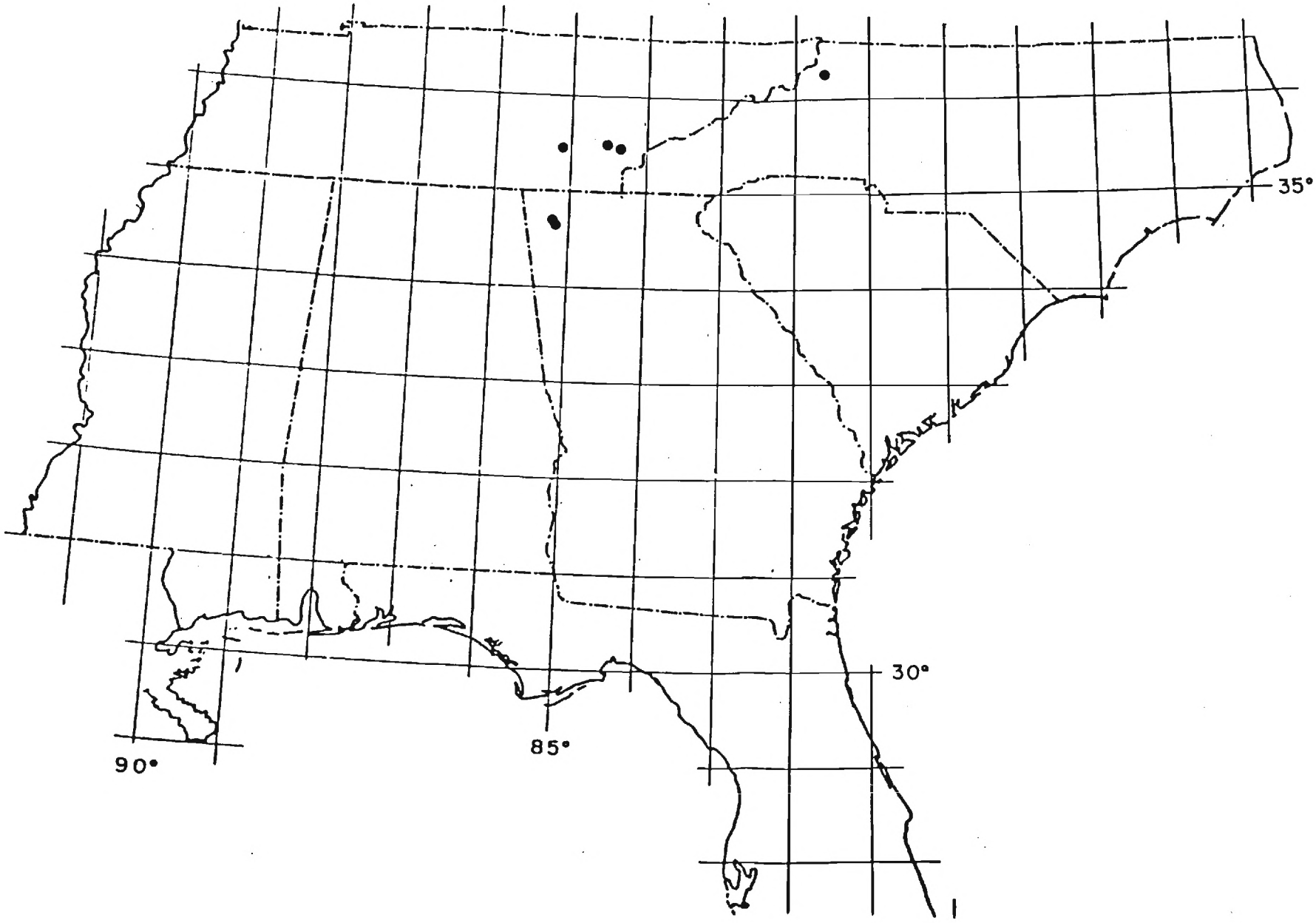

Figure 2. Epicenters from October 1, 1984 to December 31, 1984.

THE EVENT OCCURED ON OCT 9, 1984
AT ORIGIN TIME 11:54:26.25 +/- 0.000
LAFAYETTE, GA
MAGNITUDE: 3.7
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 1.000 WT= 0.000
IT WAS LOCATED AT
LATITUDE 34.7752 +/- .803 KM. (34D,46.51M)
LONGITUDE 85.1929 +/- .867 KM. (85D,11.57M)
DEPTH 14.93 +/- 10.535 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
LMT	SLG	11	55	24.33	.10	204.77	52.5	-.640
LCA	PG	11	54	35.07	.10	48.86	235.1	.203
OCA	PLG	11	54	45.20	.10	115.11	261.1	-.477
OCA	SLG	11	54	59.60	.10	115.11	261.1	-.185
ONT	SLG	11	55	24.10	.10	201.34	19.5	.095
CPO	PLG	11	54	43.00	.10	97.26	339.4	.274
TDA	PLG	11	54	51.90	.10	156.56	209.5	-.628
HVA	PLG	11	54	53.40	.10	166.48	240.3	-.767
HVA	SLG	11	55	13.20	.10	166.48	240.3	-1.013
HGA	PG	11	54	40.00	.10	82.71	226.5	-.356
CSP	PLG	11	54	53.90	.10	166.31	48.5	-.239
TKL	SLG	11	55	11.80	.10	162.65	52.7	-1.339
TKL	PLG	11	54	53.23	.10	162.65	52.7	-.305
ORT	SLG	11	55	9.75	.10	150.77	32.0	-.050
CBT	PLG	11	54	45.20	.10	110.38	39.6	.306
ONT	PLG	11	54	59.57	.10	201.34	19.5	-.359
COT	PLG	11	54	58.22	.10	197.51	304.9	-1.076
ETT	SLG	11	54	53.40	.10	91.08	47.7	.367
MSA	PLG	11	54	48.75	.10	135.76	273.4	-.339
BHT	SLG	11	55	1.80	.10	121.04	10.7	.351
SWT	PLG	11	54	43.57	.10	99.64	305.9	.450
BBG	SLG	11	55	2.40	.10	126.97	85.0	-.715
GBT	PLG	11	54	48.93	.10	133.60	42.0	.198
GBT	SLG	11	55	4.40	.10	133.60	42.0	-.577
ORT	PLG	11	54	51.73	.10	150.77	32.0	.160

DIAGONAL ELEMENTS

.5089 .5498 6.6811

COVARIANCE MATRIX:

2.590	1.716	4.401	0.000
1.716	3.023	-2.352	0.000
4.401	-2.352	446.371	0.000
0.000	0.000	0.000	0.000

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = .6159 KM.
MAJOR AXIS LENGTH = 1.2635 KM.
AZIMUTH OF MAJOR AXIS = 131.4017 DEG.
AREA OF ELLIPSE = 2.4447 SQ.KM.

MEAN RESIDUAL : -.26652 STANDARD DEVIATION : .49865

THE EVENT OCCURED ON OCT 15, 1984
AT ORIGIN TIME 16:56:52.02 +/- .046
LAFAYETTE, GA
MAGNITUDE: 2.0
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 1.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 34.7538 +/- .494 KM. (34D,45.23M)
LONGITUDE 85.1754 +/- .416 KM. (85D,10.53M)
DEPTH 11.63 +/- .666 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
TVG	PG	16	56	59.80	.10	43.37	195.6	.172
TVG	S	16	57	4.90	.10	43.37	195.6	-.099
HGA	PLG	16	57	5.90	.10	82.29	228.5	-.123
HGA	SLG	16	57	16.40	.10	82.29	228.5	.064
CBT	PLG	16	57	10.90	.10	111.22	38.2	.095
HFG	PG	16	56	54.30	.10	7.46	307.5	-.083
CCR	PLG	16	57	13.75	.10	129.55	52.2	-.085
CCR	SLG	16	57	29.60	.10	129.55	52.2	-.013
GOG	PG	16	56	54.20	.10	4.07	304.0	.072

DIAGONAL ELEMENTS

1.4977	1.2624	.1402	2.0211

COVARIANCE MATRIX:

22.432	15.589	-.711	13.942
15.589	15.938	-.635	9.956
-.711	-.635	.196	-1.826
13.942	9.956	-1.826	40.849

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = .2382 KM.
MAJOR AXIS LENGTH = .7815 KM.
AZIMUTH OF MAJOR AXIS = 140.8830 DEG.
AREA OF ELLIPSE = .5848 SQ.KM.

MEAN RESIDUAL : -.00000 STANDARD DEVIATION : .1042?

THE EVENT OCCURED ON OCT 22, 1984
AT ORIGIN TIME 18:58:41.20 +/- .379
GRANDFATHER MTN.,NC
MAGNITUDE: 2.7
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 1.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 36.3609 +/- 2.215 KM. (36D,21.65M)
LONGITUDE 81.6802 +/- 2.011 KM. (81D,40.81M)
DEPTH 2.14 +/- 3.727 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
SLT	PG	18	58	48.76	.10	40.56	283.0	.412
BEV	SLG	18	59	58.00	.50	269.12	201.1	.004
BRB	PLG	18	58	56.34	.10	87.84	218.5	.221
PKN	PLG	18	58	51.73	.10	58.45	126.6	.468
CH6	PLG	18	59	27.60	.10	284.06	196.0	-.953
GFM	S	18	58	50.68	.10	29.97	202.4	.226
BRB	SLG	18	59	7.70	.10	87.84	218.5	.625
GFM	PG	18	58	45.80	.10	29.97	202.4	-.798
CBT	PN	18	59	21.80	.50	262.29	249.9	.667
BEV	PLG	18	59	26.40	.10	269.12	201.1	.317
CBT	PLG	18	59	24.30	.10	262.29	249.9	-.653

DIAGONAL ELEMENTS

1.2248	1.2522	.2211	2.1669

COVARIANCE MATRIX:

14.552	-.909	1.279	-3.834
-.909	11.993	-1.620	3.875
1.279	-1.620	.426	.158
-3.834	3.875	.158	41.210

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = 2.3832 KM.
MAJOR AXIS LENGTH = 2.6837 KM.
AZIMUTH OF MAJOR AXIS = 17.6957 DEG.
AREA OF ELLIPSE = 20.0926 SQ.KM.

MEAN RESIDUAL : .04883 STANDARD DEVIATION : .58058

THE EVENT OCCURED ON NOV 30, 1984
AT ORIGIN TIME 19: 6: 3.29 +/- .194
MADISONVILLE, TN
MAGNITUDE: 1.4
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 1.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 35.5300 +/- .571 KM. (35D,31.80M)
LONGITUDE 84.5570 +/- .838 KM. (84D,33.42M)
DEPTH 9.98 +/- 1.296 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
TLT	PG	19	6	9.50	.10	35.50	135.6	-.065
CBT	PG	19	6	6.00	.10	12.41	85.2	-.020
RCT	PG	19	6	7.50	.10	22.57	204.9	-.008
CBT	S	19	6	8.00	.10	12.41	85.2	.033
RCT	S	19	6	10.50	.10	22.57	204.9	-.005
TLT	S	19	6	14.00	.10	35.50	135.6	-.006
DCT	PLG	19	6	13.00	.50	54.23	166.6	.351

DIAGONAL ELEMENTS
1.2910 1.9237 .4947 3.4713

COVARIANCE MATRIX:

16.638	13.649	-2.980	1.690
13.649	35.884	-7.218	27.024
-2.980	-7.218	1.914	-9.565
1.690	27.024	-9.565	85.795

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = .6405 KM.
MAJOR AXIS LENGTH = 1.3576 KM.
AZIMUTH OF MAJOR AXIS = 117.4064 DEG.
AREA OF ELLIPSE = 2.7316 SQ.KM.

MEAN RESIDUAL : .04007 STANDARD DEVIATION : .13992

THE EVENT OCCURED ON DEC 17, 1984
AT ORIGIN TIME 17:48:27.64 +/- .305
VONORE,TENN
MAGNITUDE: 2.2
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 1.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 35.4539 +/- .989 KM. (35D,27.23M)
LONGITUDE 84.3349 +/- 1.485 KM. (84D,20.10M)
DEPTH 17.18 +/- 1.916 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
RCT	PLG	17	48	33.60	.10	31.99	247.9	.271
RCT	SLG	17	48	38.10	.10	31.99	247.9	.273
TLT	PG	17	48	31.30	.10	17.59	164.5	-.496
TLT	S	17	48	34.60	.10	17.59	164.5	-.133
BEV	SLG	17	49	28.00	.10	209.87	135.7	.207
CH6	SLG	17	49	36.00	.10	238.36	136.0	.205
RHT	PLG	17	48	38.00	.10	64.87	230.1	-.764
RHT	SLG	17	48	47.00	.10	64.87	230.1	-.064
DCT	PLG	17	48	35.00	.10	45.00	189.9	-.478
DCT	SLG	17	48	42.10	.10	45.00	189.9	.620
CBT	PG	17	48	31.20	.10	12.26	320.7	-.009
CBT	S	17	48	34.10	.10	12.26	320.7	.367

DIAGONAL ELEMENTS
.7663 1.1508 .2363 1.4846

COVARIANCE MATRIX:

5.873	-4.394	1.014	-4.354
-4.394	13.242	-2.375	11.334
1.014	-2.375	.558	-2.742
-4.354	11.334	-2.742	22.040

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = .9355 KM.
MAJOR AXIS LENGTH = 1.8709 KM.
AZIMUTH OF MAJOR AXIS = 64.9932 DEG.
AREA OF ELLIPSE = 5.4985 SQ.KM.

MEAN RESIDUAL : -.00000 STANDARD DEVIATION : .40801

THE EVENT OCCURED ON DEC 23, 1984
AT ORIGIN TIME 7:22:44.28 +/- .048
GRAYSVILLE,TENN
MAGNITUDE: 1.8
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 1.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 35.4325 +/- .199 KM. (35D,25.95M)
LONGITUDE 85.1275 +/- .320 KM. (85D, 7.65M)
DEPTH 18.58 +/- .342 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
RCT	PG	7	22	52.20	.10	43.42	102.9	-.029
RCT	S	7	22	57.85	.10	43.42	102.9	.017
CBT	PLG	7	22	55.50	.10	65.28	79.5	.029
CBT	SLG	7	23	3.80	.10	65.28	79.5	-.017
TLT	SLG	7	23	7.40	.10	78.03	100.8	-.000

DIAGONAL ELEMENTS
2.6034 4.1817 .6309 4.4687

COVARIANCE MATRIX:

67.777	-23.368	-15.720	25.805
-23.368	174.865	6.951	-121.673
-15.720	6.951	3.980	-10.717
25.805	-121.673	-10.717	199.689

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = .3834 KM.
MAJOR AXIS LENGTH = .6481 KM.
AZIMUTH OF MAJOR AXIS = 78.2110 DEG.
AREA OF ELLIPSE = .7807 SQ.KM.

MEAN RESIDUAL : .00000 STANDARD DEVIATION : .02417

GEORGIA INSTITUTE OF TECHNOLOGY

QUARTERLY EARTHQUAKE BULLETIN

1 January 1985 - 31 March 1985

By

Leland Timothy Long, Karl-Heinz Zelt, Judy A. Demere,

Jeih-San Liow, Robert M. Duckworth, An Tie,

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School of Geophysical Sciences

Earth Sciences Division

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U.S. Army Corps of Engineers
(Savannah District)

Tennessee Valley Authority

U.S. Army Corps of Engineers
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1 January 1985 - 31 March 1985

The information presented in this bulletin includes the origin times, magnitudes, hypocentral coordinates and their precision, and the arrival times of selected phases for local earthquakes recorded by seismic stations maintained by Georgia Tech, School of Geophysical Sciences.

The network consists of 24 seismic stations located in Alabama, southeast Tennessee, Georgia, and South Carolina monitored by the School of Geophysical Sciences at Georgia Tech. Station coverage for the operating stations are given in Table 1. Additional seismogram readings were obtained from stations operated by the Tennessee Valley Authority and the Tennessee Earthquake Information Center. The coordinates of the stations used in locating the events are given in Table 2. A map of the seismic stations maintained by Georgia Tech is given in Figure 1. Bollinger and Mathena (1983) describe the instrumentation of the seismic network and magnitude threshold.

The events are located using a computer program with techniques similar to those used in HYPO71 but is more flexible in assigning weights and utilizing phases.

Magnitudes are defined by their duration according to the equation:

$$m_b(Lg)_{Dur} = -3.45 + 2.85 \log_{10} T ,$$

where T is the mean signal duration in seconds (from Bollinger et al., 1984). A map showing the epicenters can be seen in Figure 2 and is followed by data sheets containing information and individual events that occurred during the quarter.

References

Bollinger, G. A., and E. Mathena (1983). Seismicity of the southeastern United States, Southeastern U.S. Network Bulletin, 11, May 1983.

Bollinger, G. A., M. C.Chapman, and M. S. Sibol (1984). Virginia Regional Seismic Network, 77-134-27, June 1984, Dept. of Geological Sciences--Extension Division, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061.

Table 1. Station Coverage, January 1 - March 31, 1985

Station	Percent Coverage (%)	Station	Percent Coverage (%)
BKA	96.3	IVA	37.3
HGA	31.3	BEV	97.0
HVA	96.7	CHF	78.7
OCA	94.7	CH5	55.7
TSA	91.3	CH6	16.0
TDA	98.0		
MLA	94.7		
TLT	57.3		
RCT	95.7		
RHT	97.3		
DCT	90.7		
CBT	98.7		
TVG	39.0		
CDG	78.0		
DALG	4.3		

Note: The coverage of CBT(NS) and CBT(EW) are dropped because only the vertical component is recorded continuously. However, all the three-components are monitored by a digital event recorder.

Table 2. Coodinates of Stations Used in Locating the Events in this Report

Station	Latitude	Longitude	Elevation (km)
BEV	34.0893	82.7334	.158
CBT	35.5394	84.4206	.3566
CDG	34.6108	84.6667	.332
CHF	34.0247	82.5867	.1520
CH5	33.7332	82.3118	.114
DCT	35.0542	84.4194	.5075
HGA	34.2602	85.8464	.3840
IVA	34.2721	82.5136	.134
RCT	35.3453	84.6613	.265
RHT	35.0781	84.8825	.2987
TDA	33.5417	86.0247	.1814
TLT	35.3012	84.2833	.512
TVG	34.3771	85.3023	.3231

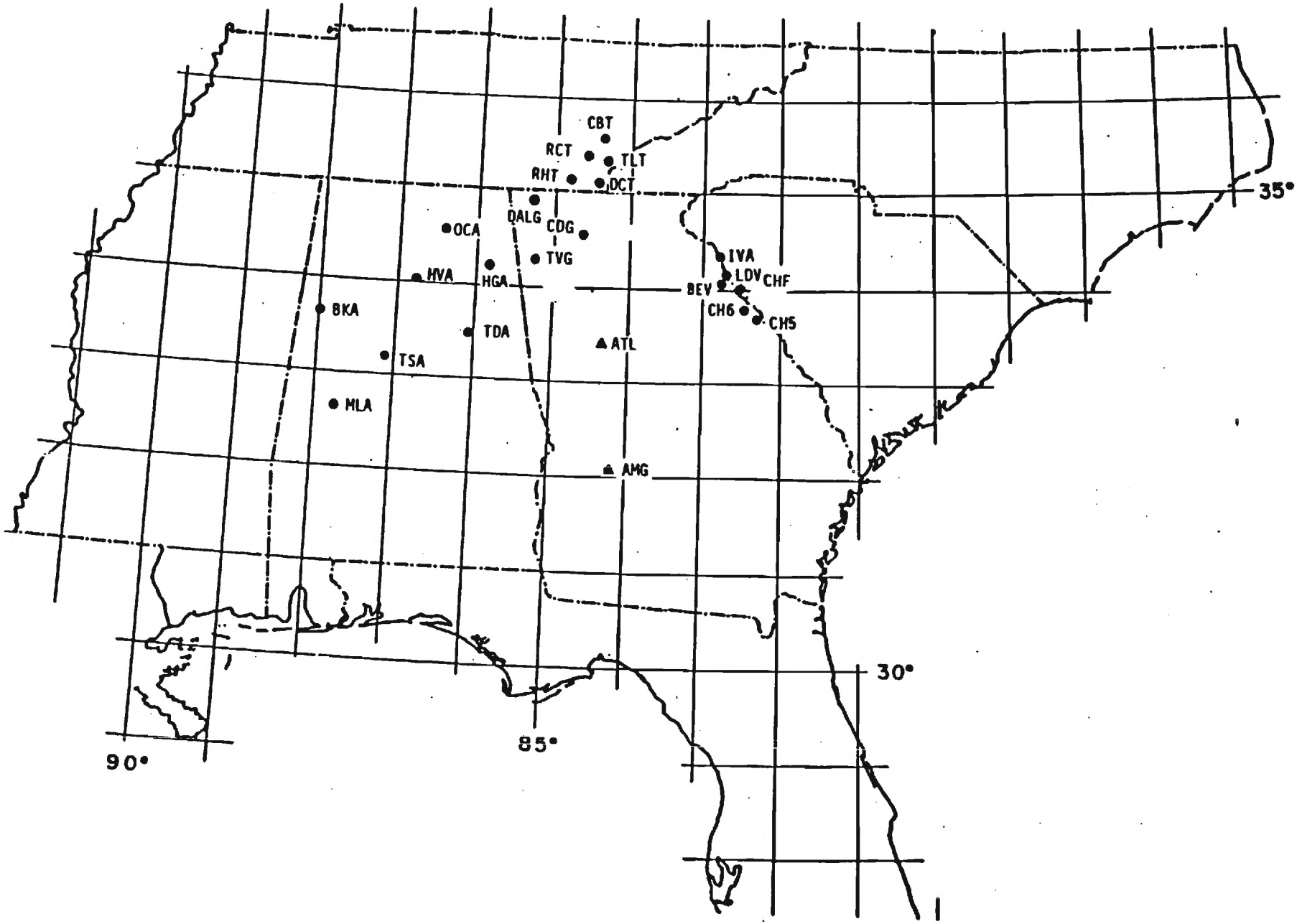

Figure 1. Seismic stations maintained by Georgia Tech as of March 1985.

THE EVENT OCCURED ON JAN 25, 1985
AT ORIGIN TIME 2:13:34.23 +/- .180
CALDERWOOD DAM, TN
MAGNITUDE: 1.8
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 1.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 35.4441 +/- .773 KM. (35D,26.64M)
LONGITUDE 84.9682 +/- .930 KM. (84D,58.09M)
DEPTH 18.56 +/- 1.383 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
CBT	PLG	2	13	43.20	.10	50.83	78.0	.166
CBT	SLG	2	13	49.40	.10	50.83	78.0	-.310
TLT	PLG	2	13	45.30	.10	64.17	104.3	.061
TLT	SLG	2	13	53.60	.10	64.17	104.3	.142
RCT	PG	2	13	40.10	.10	29.93	111.5	-.069
RCT	S	2	13	44.40	.10	29.93	111.5	.040
RHT	PLG	2	13	41.60	.10	41.33	169.1	.135
RHT	SLG	2	13	47.00	.10	41.33	169.1	-.043
TDA	SLG	2	14	40.20	.10	231.77	204.9	-.337
HGA	SLG	2	14	18.80	.10	153.62	211.6	.215

DIAGONAL ELEMENTS

1.2693	1.5273	.2954	2.2695

COVARIANCE MATRIX:

16.112	15.720	-3.210	-8.819
15.720	23.327	-4.068	-5.816
-3.210	-4.068	.872	.403
-8.819	-5.816	.403	51.505

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = .4471 KM.
MAJOR AXIS LENGTH = 1.4127 KM.
AZIMUTH OF MAJOR AXIS = 128.5377 DEG.
AREA OF ELLIPSE = 1.9843 SQ.KM.

MEAN RESIDUAL : -.00009 STANDARD DEVIATION : .19265

THE EVENT OCCURED ON MAR 9, 1985
AT ORIGIN TIME 14:29:57.67 +/- .219
APISON,TENN
MAGNITUDE: 2.3
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 1.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 35.0291 +/- 1.220 KM. (35D, 1.75M)
LONGITUDE 84.9942 +/- .686 KM. (84D,59.65M)
DEPTH 10.97 +/- 2.063 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
CBT	PLG	14	30	10.45	.10	77.10	42.6	-.367
CBT	SLG	14	30	20.45	.10	77.10	42.6	-.080
RHT	PG	14	30	.40	.10	11.55	61.9	-.000
DCT	PLG	14	30	7.00	.10	52.52	87.0	.245
DCT	SLG	14	30	13.50	.10	52.52	87.0	-.128
TLT	PLG	14	30	10.00	.10	71.54	65.0	.101
TLT	SLG	14	30	18.90	.10	71.54	65.0	-.070
CDG	PLG	14	30	7.20	.10	55.19	147.1	.004
RCT	SLG	14	30	12.20	.10	46.39	40.8	.295

DIAGONAL ELEMENTS

1.9319	1.0865	.3466	3.2674

COVARIANCE MATRIX:

37.323	6.570	-6.152	22.401
6.570	11.804	-.267	2.150
-6.152	-.267	1.201	-4.966
22.401	2.150	-4.966	106.761

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = .8071 KM.
MAJOR AXIS LENGTH = 1.5755 KM.
AZIMUTH OF MAJOR AXIS = 166.3772 DEG.
AREA OF ELLIPSE = 3.9946 SQ.KM.

MEAN RESIDUAL : -.00000 STANDARD DEVIATION : .19966

THE EVENT OCCURED ON MAR 12, 1985
AT ORIGIN TIME 8:57:43.23 +/- .153
SERVILLA,TENN
MAGNITUDE: 1.6
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 1.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 35.2687 +/- 1.115 KM. (35D,16.12M)
LONGITUDE 84.4654 +/- .295 KM. (84D,27.92M)
DEPTH 12.55 +/- 2.388 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
CBT	PG	8	57	48.80	.10	30.30	7.7	-.001
CBT	S	8	57	52.70	.10	30.30	7.7	-.041
TLT	PG	8	57	46.80	.10	16.95	77.8	-.025
TLT	S	8	57	49.50	.10	16.95	77.8	.127
TVG	PLG	8	58	4.10	.10	124.81	217.9	-.164
TVG	SLG	8	58	19.70	.10	124.81	217.9	.207
DCT	PG	8	57	47.90	.10	24.16	170.0	.038
DCT	S	8	57	51.00	.10	24.16	170.0	-.141

DIAGONAL ELEMENTS

2.8217	.7461	.3884	6.0451

COVARIANCE MATRIX:

79.621	8.433	9.211	-157.689
8.433	5.566	.448	-11.591
9.211	.448	1.508	-22.323
-157.689	-11.591	-22.323	365.427

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = .3552 KM.
MAJOR AXIS LENGTH = 1.4835 KM.
AZIMUTH OF MAJOR AXIS = 173.5847 DEG.
AREA OF ELLIPSE = 1.6553 SQ.KM.

MEAN RESIDUAL : .00000 STANDARD DEVIATION : .12493

THE EVENT OCCURED ON MAR 12, 1985
AT ORIGIN TIME 13: 4:44.75 +/- .245
NORTH OF HARRISBURG,TENN
MAGNITUDE: 2.0
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 0.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 35.8882 +/- 1.393 KM. (35D,53.29M)
LONGITUDE 83.4429 +/- 1.460 KM. (83D,26.57M)
DEPTH 0.00 +/- 0.000 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
CBT	PLG	13	5	1.10	.10	96.38	246.4	.018
CBT	SLG	13	5	13.00	.10	96.38	246.4	-.025
TLT	PLG	13	5	1.80	.10	99.99	229.6	.121
TLT	SLG	13	5	14.10	.10	99.99	229.6	.061
DCT	PLG	13	5	6.50	.10	127.79	223.9	.225
DCT	SLG	13	5	21.90	.10	127.79	223.9	.051
TVG	PLG	13	5	24.00	.10	237.23	225.6	-.362
TVG	SLG	13	5	52.50	.10	237.23	225.6	-.088

DIAGONAL ELEMENTS
2.5329 2.6546 .4456

COVARIANCE MATRIX:

64.158	28.961	6.983	0.000
28.961	70.469	-4.797	0.000
6.983	-4.797	1.986	0.000
0.000	0.000	0.000	0.000

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = 1.2715 KM.
MAJOR AXIS LENGTH = 2.0208 KM.
AZIMUTH OF MAJOR AXIS = 131.8906 DEG.
AREA OF ELLIPSE = 8.0718 SQ.KM.

MEAN RESIDUAL : .00000 STANDARD DEVIATION : .17391

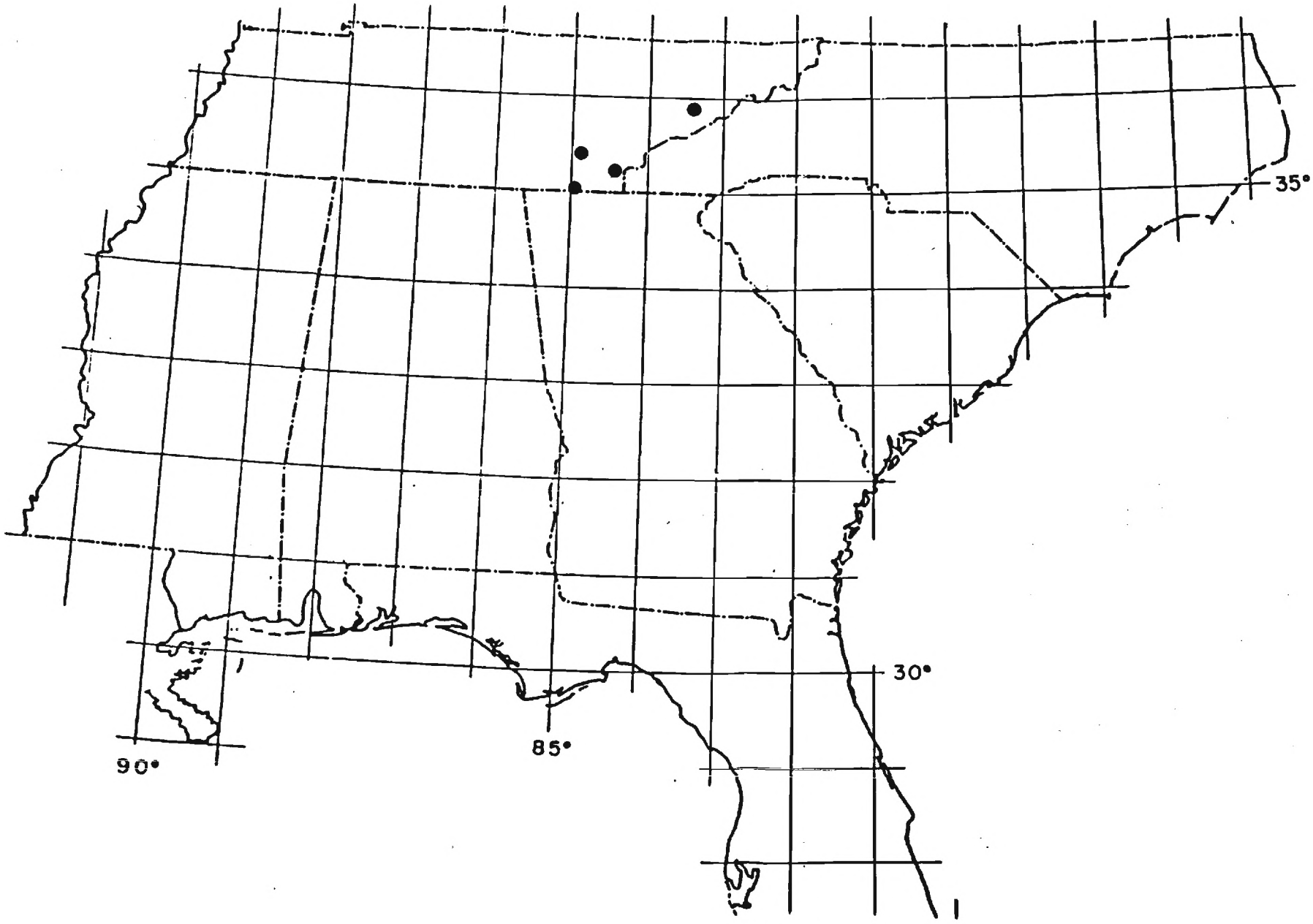

Figure 2. Epicenters from January 1, 1985 to March 31, 1985.

GEORGIA INSTITUTE OF TECHNOLOGY

QUARTERLY EARTHQUAKE BULLETIN

1 April 1985 - 30 June 1985

By

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The events are located using a computer program with techniques similar to those used in HYPO71 but is more flexible in assigning weights and utilizing phases.

Magnitudes are defined by their duration according to the equation:

$$m_b(Lg)_{Dur} = -3.45 + 2.85 \log_{10} T ,$$

where T is the mean signal duration in seconds (from Bollinger et al., 1984). A map showing the epicenters can be seen in Figure 2 and is followed by data sheets containing information and individual events that occurred during the quarter.

References

Bollinger, G. A., and E. Mathena (1983). Seismicity of the southeastern United States, Southeastern U.S. Network Bulletin, 11, May 1983.

Bollinger, G. A., M. C.Chapman, and M. S. Sibol (1984). Virginia Regional Seismic Network, 77-134-27, June 1984, Dept. of Geological Sciences--Extension Division, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061.

Table 1. Station Coverage, April 1 - June 30, 1985

Station	Percent Coverage (%)	Station	Percent Coverage (%)
BKA	91.0	IVA	80.2
HGA	68.5	BEV	83.6
HVA	86.1	CHF	49.0
OCA	98.3	CH5	56.5
TSA	70.2	CH6	84.3
TDA	88.5		
MLA	96.8		
TLT	73.3		
RCT	70.1		
RHT	74.1		
DCT	99.1		
CBT	92.0		
TVG	38.1		
CDG	70.7		
DALG	17.4		

Note: The coverage of CBT(NS) and CBT(EW) are dropped because only the vertical component is recorded continuously. However, all the three-components are monitored by a digital event recorder.

Table 2. Coodinates of Stations Used in Locating the Events in this Report

Station	Latitude	Longitude	Elevation (km)
BKA	33.6338	87.9690	.122
CBT	35.5394	84.4206	.3566
CHTN	36.5847	82.7200	.558
CH6	33.8938	82.5291	.130
CPO	35.5948	85.5704	.574
COTN	35.7842	86.9707	.320
DCT	35.0542	84.4194	.5075
ETT	35.326	84.455	.588
GBTN	35.666	84.211	.326
HPK	35.926	83.879	.305
HVA	34.0264	86.7692	.195
JSC	34.2790	81.2580	.120
LCAL	34.5225	85.6302	.544
LMTN	35.8868	83.4098	.610
MSAL	34.8467	86.6735	.260
ONTN	36.4815	84.4433	.635
ORT	35.9095	84.3048	.370
PRM	34.0833	82.3633	.170
RCT	35.3453	84.6613	.265
RHT	35.0781	84.8825	.2987
SGS	33.1927	80.5118	.0274
SRPD	33.1550	81.7125	.031
SRPN	33.3290	81.5888	.095
SRPW	33.2023	81.5782	.077
SSKY	36.7955	85.7925	.300
SWTN	35.3002	86.0762	.305
TDA	33.5417	86.0247	.1814
TKL	35.658	83.774	.350
TVG	34.3771	85.3023	.3231
VRN	33.375	80.9417	.030

Table 3. Events Detected but Not Located

April 9	20:51	CBT	P	20:51:20.0
			S	20:51:25.0
June 17	00:30	DCT	P	00:30:58.5
			S	00:31:06.0
		CBT	S	00:30:56.4
	00:39	DCT	P	00:39:28.0
			S	00:39:35.3
		CBT	S	00:39:25.5
June 20	12:09	DCT	P	12:09:27.9
			S	12:09:32.2
		CBT	P	12:09:33.0
			S	12:09:40.0

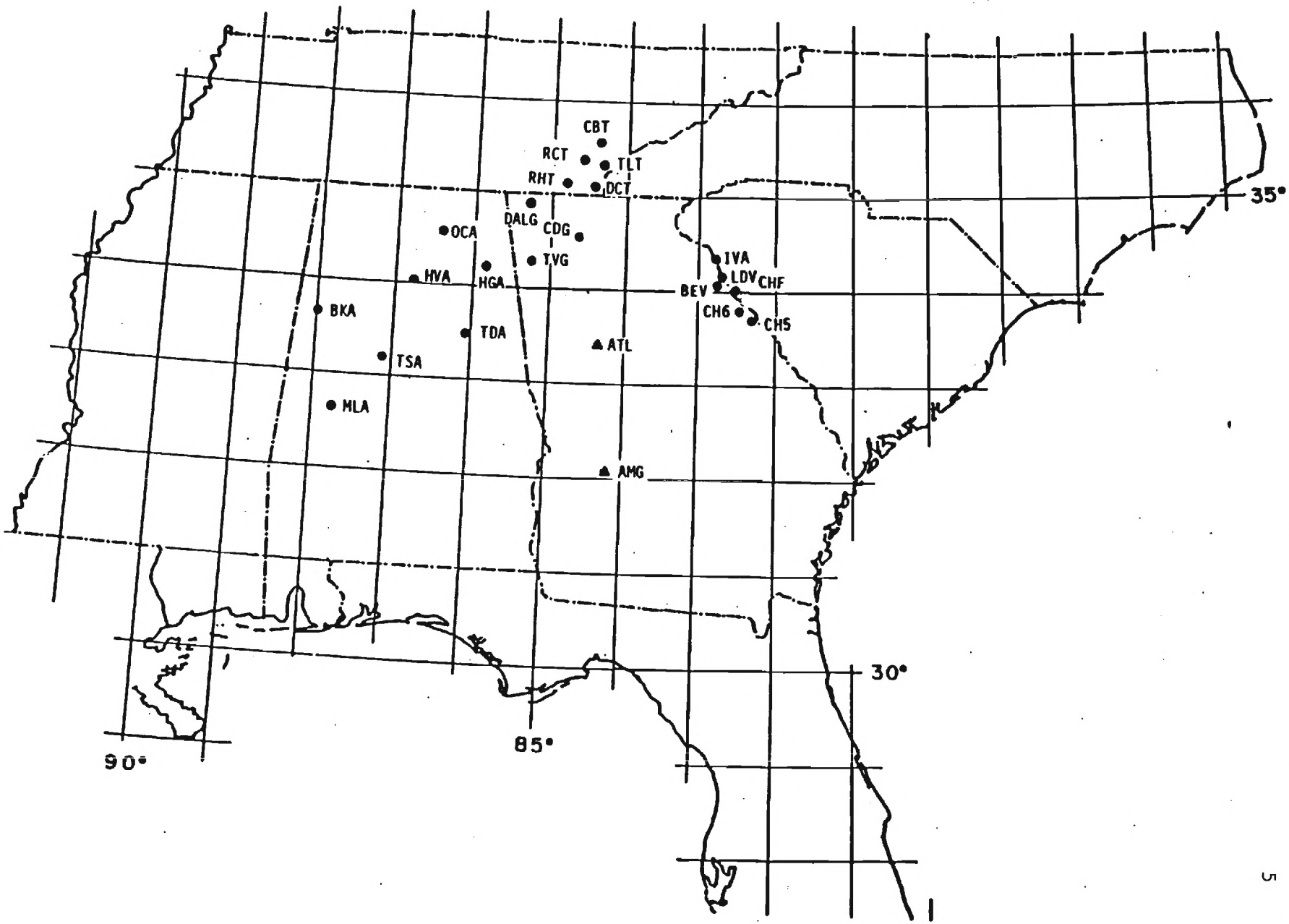

Figure 1. Seismic stations maintained by Georgia Tech as of June 1985.

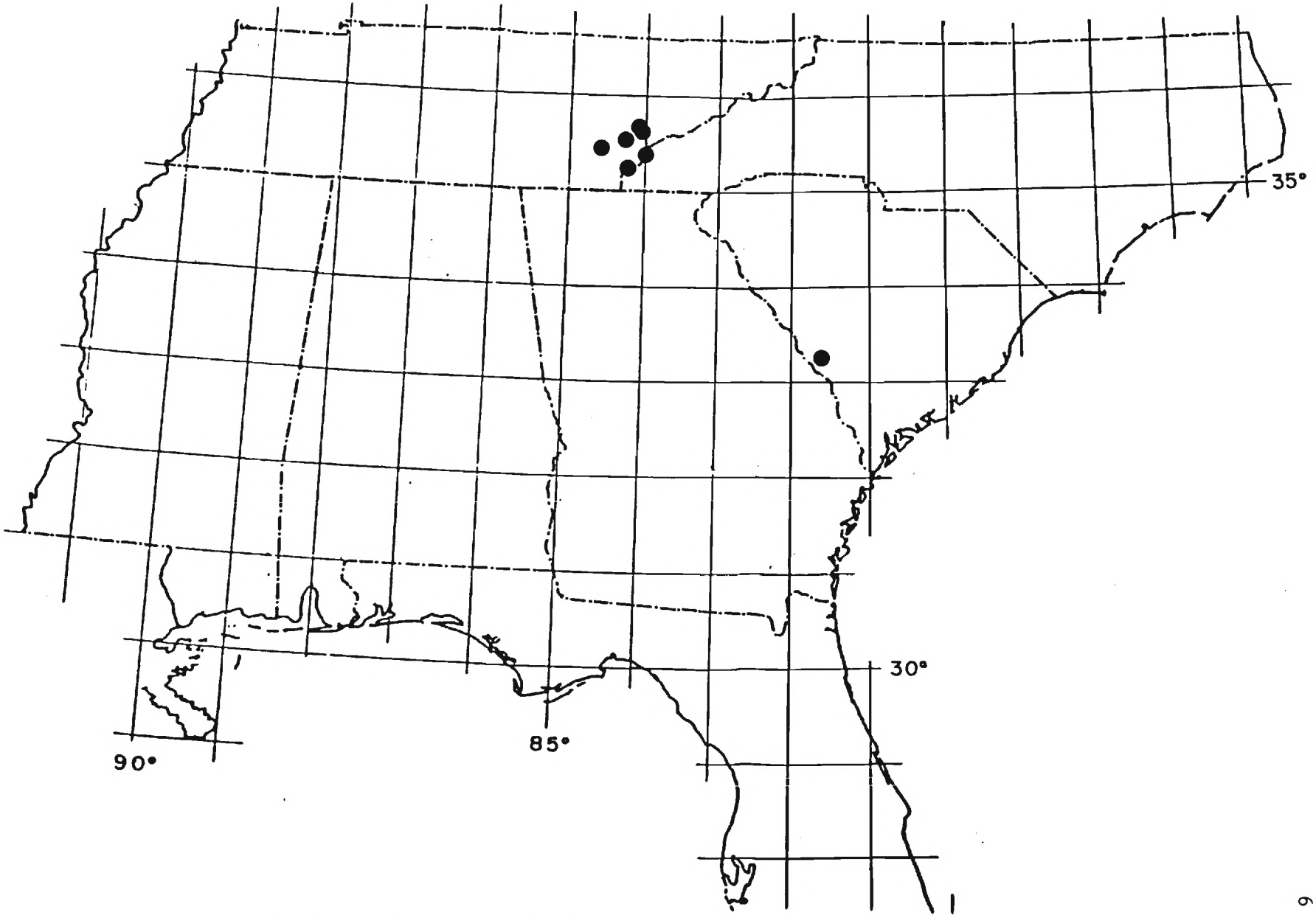

Figure 2. Epicenters from April 1, 1985 to June 30, 1985.

THE EVENT OCCURED ON APR 9, 1985
AT ORIGIN TIME 21:41: .73 +/- .151
MARYVILLE,TENN
MAGNITUDE: 1.3
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 1.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 35.7663 +/- .807 KM. (35D,45.98M)
LONGITUDE 84.1120 +/- .741 KM. (84D, 6.72M)
DEPTH 21.65 +/- .827 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
CBT	PG	21	41	7.95	.10	37.58	228.0	-.071
CBT	S	21	41	13.20	.10	37.58	228.0	.042
DCT	PLG	21	41	14.90	.10	83.74	199.5	-.075
DCT	SLG	21	41	25.50	.10	83.74	199.5	.044
RCT	PLG	21	41	12.55	.10	68.18	226.9	.146
RCT	SLG	21	41	21.00	.10	68.18	226.9	-.086

DIAGONAL ELEMENTS
2.7409 2.5162 .5145 2.8098

COVARIANCE MATRIX:

75.127	13.567	6.227	31.068
13.567	63.313	-9.596	24.934
6.227	-9.596	2.647	-2.961
31.068	24.934	-2.961	78.949

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = 1.0857 KM.
MAJOR AXIS LENGTH = 1.3490 KM.
AZIMUTH OF MAJOR AXIS = 146.7643 DEG.
AREA OF ELLIPSE = 4.6010 SQ.KM.

MEAN RESIDUAL : -.00000 STANDARD DEVIATION : .09308

THE EVENT OCCURED ON APR 10, 1985
AT ORIGIN TIME 10:53:59.25 +/- .262
MARYVILLE,TENN
MAGNITUDE: 2.4
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 1.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 35.6903 +/- .721 KM. (35D,41.42M)
LONGITUDE 84.0674 +/- 1.733 KM. (84D, 4.04M)
DEPTH 18.64 +/- 1.546 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
CBT	PG	10	54	6.20	.10	36.09	242.4	.105
CBT	S	10	54	10.70	.10	36.09	242.4	-.221
RHT	PLG	10	54	16.00	.10	100.28	227.6	-.227
RHT	SLG	10	54	28.50	.10	100.28	227.6	-.120
DCT	PLG	10	54	12.00	.10	77.42	204.5	-.450
DCT	SLG	10	54	22.00	.10	77.42	204.5	-.200
RCT	PLG	10	54	10.85	.10	66.00	234.7	.288
GBT	PG	10	54	2.92	.10	13.26	258.3	-.194
GBT	S	10	54	5.95	.10	13.26	258.3	.107
TKL	PG	10	54	4.68	.10	26.77	97.7	-.073
TKL	S	10	54	8.81	.10	26.77	97.7	.173
ETT	PLG	10	54	8.69	.10	53.52	221.1	.191
ETT	SLG	10	54	16.10	.10	53.52	221.1	.614

DIAGONAL ELEMENTS
.8109 1.9473 .2939 1.7370

COVARIANCE MATRIX:

6.575	7.110	-.303	1.945
7.110	37.918	-4.995	23.896
-.303	-4.995	.864	-4.307
1.945	23.896	-4.307	30.171

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = .7292 KM.
MAJOR AXIS LENGTH = 2.0408 KM.
AZIMUTH OF MAJOR AXIS = 102.2022 DEG.
AREA OF ELLIPSE = 4.6754 SQ.KM.

MEAN RESIDUAL : -.00055 STANDARD DEVIATION : .28137

THE EVENT OCCURED ON APR 20, 1985
AT ORIGIN TIME 4:21: 2.39 +/- .096
ATHENS,TENN
MAGNITUDE: 2.5
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 1.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 35.4858 +/- .690 KM. (35D,29.15M)
LONGITUDE 84.5871 +/- .702 KM. (84D,35.23M)
DEPTH 22.16 +/- 1.808 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
DCT	PLG	4	21	12.00	.10	50.24	162.3	.907
DCT	SLG	4	21	18.10	.10	50.24	162.3	.399
RHT	PLG	4	21	12.30	.10	52.58	210.8	.821
RHT	SLG	4	21	18.40	.10	52.58	210.8	.042
RCT	PG	4	21	6.80	.10	16.99	203.4	-.286
TDA	PLG	4	21	44.60	.10	252.01	211.8	.155
TDA	SLG	4	22	13.80	.10	252.01	211.8	-.580
HVA	SLG	4	22	15.00	.10	255.75	231.2	-.430
CBT	PG	4	21	6.90	.10	16.23	68.5	-.110
CBT	S	4	21	10.50	.10	16.23	68.5	.230
ORT	PLG	4	21	12.31	.10	54.60	27.1	.496
ORT	SLG	4	21	19.02	.10	54.60	27.1	.093
HPK	PLG	4	21	16.80	.10	80.70	52.6	.672
HPK	SLG	4	21	26.00	.10	80.70	52.6	-.258
ONT	PLG	4	21	21.06	.10	111.23	6.7	-.114
ONT	SLG	4	21	35.04	.10	111.23	6.7	.208
LMT	PLG	4	21	21.36	.10	115.91	67.2	-.588
LMT	SLG	4	21	35.22	.10	115.91	67.2	-.929
CPO	PLG	4	21	18.27	.10	90.05	277.7	.597
CPO	SLG	4	21	29.20	.10	90.05	277.7	.317
SWT	PLG	4	21	25.63	.10	136.69	261.4	.248
SWT	SLG	4	21	42.18	.10	136.69	261.4	.196
LCA	PLG	4	21	26.52	.10	142.75	221.9	.136
LCA	SLG	4	21	43.33	.10	142.75	221.9	-.357
SSK	PLG	4	21	32.88	.10	181.87	323.5	.030
MSA	PLG	4	21	35.58	.10	202.16	249.6	-.625
CHT	PLG	4	21	36.55	.10	208.72	53.9	-.739
CHT	SLG	4	22	2.66	.10	208.72	53.9	.441
COT	PLG	4	21	38.20	.10	218.82	278.7	-.757
BKA	SLG	4	22	47.10	.10	369.27	236.8	-.217

DIAGONAL ELEMENTS
.4491 .4574 .0624 1.1774

COVARIANCE MATRIX:

2.017	1.129	.065	-1.292
1.129	2.092	.022	-.532
.065	.022	.039	-.254
-1.292	-.532	-.254	13.863

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = .4933 KM.
MAJOR AXIS LENGTH = .9151 KM.
AZIMUTH OF MAJOR AXIS = 134.0501 DEG.
AREA OF ELLIPSE = 1.4183 SQ.KM.

MEAN RESIDUAL : -.00004 STANDARD DEVIATION : .48564

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THE EVENT OCCURED ON APR 28, 1985
AT ORIGIN TIME  7: 4:23.59 +/-     .246
TENN
MAGNITUDE: 1.0
THE WEIGHTS ARE
WX=  1.000  WY=  1.000  WZ=  1.000  WT=  1.000
IT WAS LOCATED AT
LATITUDE   35.5646  +/-    1.019 KM.  (35D,33.88M)
LONGITUDE  84.2270  +/-    1.082 KM.  (84D,13.62M)
DEPTH       9.28    +/-    2.077 KM.


 STATION PHASE     HR MIN   SEC +OR-SEC  DIST    AZ       OBS-THE
   RCT    PLG       7   4 31.45     .10   46.28  238.4     -.189
   RCT    SLG       7   4 37.90     .10   46.28  238.4      .110
   DCT    PLG       7   4 34.00     .10   59.24  197.2      .220
   DCT    SLG       7   4 41.30     .10   59.24  197.2     -.129
   CBT    PG        7   4 27.00     .10   17.77  261.0     -.032
   CBT    S         7   4 29.50     .10   17.77  261.0      .018
 DIAGONAL ELEMENTS
     2.1330     2.2661      .5156     4.3475

COVARIANCE MATRIX:

    45.496     -9.941      7.229     30.029
    -9.941     51.353     -9.472     58.126
     7.229     -9.472      2.658     -8.140
    30.029     58.126     -8.140    189.006

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH      =      1.4734 KM.
MAJOR AXIS LENGTH      =      1.8311 KM.
AZIMUTH OF MAJOR AXIS  =     53.2067 DEG.
AREA OF ELLIPSE        =      8.4756 SQ.KM.

 MEAN RESIDUAL :     -.00022  STANDARD DEVIATION :      .15104
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THE EVENT OCCURED ON MAY 23, 1985
AT ORIGIN TIME  5:29:38.66 +/-     .243
TENN
MAGNITUDE: 0.4
THE WEIGHTS ARE
WX=  1.000  WY=  1.000  WZ=  0.000  WT=  1.000
IT WAS LOCATED AT
LATITUDE   35.2188  +/-    1.322 KM.  (35D,13.13M)
LONGITUDE  84.2929  +/-     .570 KM.  (84D,17.57M)
DEPTH       0.00    +/-   0.000 KM.


 STATION PHASE     HR MIN   SEC +OR-SEC  DIST    AZ       OBS-THE
   RCT   PLG       5  29 45.20    .10   36.37  292.7      .129
   RCT   SLG       5  29 50.00    .10   36.37  292.7     -.076
   DCT   PLG       5  29 42.50    .10   21.59  212.3     -.129
   DCT   SLG       5  29 46.00    .10   21.59  212.3      .076
 DIAGONAL ELEMENTS
     3.4311     1.4801      .6304

COVARIANCE MATRIX:

   117.728   -33.622    20.847     0.000
   -33.622    21.906    -6.585     0.000
    20.847    -6.585     3.974     0.000
     0.000     0.000     0.000     0.000

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH      =      .7090 KM.
MAJOR AXIS LENGTH      =     2.3908 KM.
AZIMUTH OF MAJOR AXIS  =    17.5300 DEG.
AREA OF ELLIPSE        =     5.3250 SQ.KM.

 MEAN RESIDUAL :    -.00000  STANDARD DEVIATION :     .12184
```

THE EVENT OCCURED ON JUN 9, 1985
AT ORIGIN TIME 0:38:42.55 +/- .136
BARNWELL, SC
MAGNITUDE: 2.5
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 0.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 33.2368 +/- .982 KM. (33D,14.21M)
LONGITUDE 81.6837 +/- 1.108 KM. (81D,41.02M)
DEPTH 0.00 +/- 0.000 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
SRN	PG	0	38	45.42	.10	13.51	40.8	.408
SRD	PG	0	38	44.37	.10	9.47	196.5	.094
SRW	PG	0	38	45.00	.10	10.55	111.3	.527
SGS	PLG	0	39	.45	.10	109.33	92.6	-.576
CH6	PLG	0	39	.40	.10	107.31	313.0	-.292
CH6	SLG	0	39	14.00	.50	107.31	313.0	.101
VRN	PLG	0	38	54.70	.10	72.60	107.7	-.255
PRM	PLG	0	39	1.90	.10	113.24	326.2	.228
JSC	PLG	0	39	3.00	.10	122.20	18.7	-.154

DIAGONAL ELEMENTS
.9686 .9992 .1266

COVARIANCE MATRIX:

7.556	-3.654	-.339	0.000
-3.654	9.620	.544	0.000
-.339	.544	.145	0.000
0.000	0.000	0.000	0.000

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = .9029 KM.
MAJOR AXIS LENGTH = 1.4516 KM.
AZIMUTH OF MAJOR AXIS = 52.8843 DEG.
AREA OF ELLIPSE = 4.1175 SQ.KM.

MEAN RESIDUAL : .00898 STANDARD DEVIATION : .35710

THE EVENT OCCURED ON JUN 14, 1985
AT ORIGIN TIME 0:30:37.78 +/- .702
TELLICOPLAIN,TENN
MAGNITUDE: 1.8
THE WEIGHTS ARE
WX= 1.000 WY= 1.000 WZ= 0.000 WT= 1.000
IT WAS LOCATED AT
LATITUDE 35.3472 +/- 3.821 KM. (35D,20.83M)
LONGITUDE 84.0312 +/- 1.365 KM. (84D, 1.87M)
DEPTH 0.00 +/- 0.000 KM.

STATION	PHASE	HR	MIN	SEC	+OR-SEC	DIST	AZ	OBS-THE
CBT	PLG	0	30	45.00	.10	41.32	301.1	-.009
CBT	SLG	0	30	50.60	.20	41.32	301.1	.014
DCT	PLG	0	30	45.90	.20	47.98	227.5	-.210
DCT	SLG	0	30	52.10	.20	47.98	227.5	-.357
TVG	PLG	0	31	4.50	.20	157.89	227.4	.223
TVG	SLG	0	31	24.20	.50	157.89	227.4	.870

DIAGONAL ELEMENTS
3.9649 1.3850 .6839

COVARIANCE MATRIX:

78.444	-4.618	13.847	0.000
-4.618	10.002	-1.425	0.000
13.847	-1.425	2.649	0.000
0.000	0.000	0.000	0.000

ERROR ELLIPSE IS AS FOLLOWS:
MINOR AXIS LENGTH = 1.7773 KM.
MAJOR AXIS LENGTH = 5.0663 KM.
AZIMUTH OF MAJOR AXIS = 3.8429 DEG.
AREA OF ELLIPSE = 28.2881 SQ.KM.

MEAN RESIDUAL : .08852 STANDARD DEVIATION : .43145

GEORGIA INSTITUTE OF TECHNOLOGY

QUARTERLY EARTHQUAKE BULLETIN

1 July 1985 - 30 September 1985

By

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QUARTERLY EARTHQUAKE BULLETIN

1 July 1985 - 30 September 1985

The information presented in this bulletin includes the origin times, magnitudes, hypocentral coordinates and their precision, and the arrival times of selected phases for local earthquakes recorded by seismic stations maintained by Georgia Tech, School of Geophysical Sciences.

The network consists of 22 seismic stations located in Alabama, southeast Tennessee, Georgia, and South Carolina monitored by the School of Geophysical Sciences at Georgia Tech. Station coverage for the operating stations are given in Table 1. Additional seismogram readings were obtained from stations operated by the Tennessee Valley Authority and the Tennessee Earthquake Information Center. The coordinates of the stations used in locating the events are given in Table 2. A map of the seismic stations maintained by Georgia Tech is given in Figure 1. Bollinger and Mathena (1983) describe the instrumentation of the seismic network and magnitude threshold.

The events are located using a computer program with techniques similar to those used in HYPO71 but is more flexible in assigning weights and utilizing phases.

Magnitudes are defined by their duration according to the equation:

$$m_b(Lg)_{Dur} = -3.45 + 2.85 \log_{10} T ,$$

where T is the mean signal duration in seconds (from Bollinger et al., 1984). A map showing the epicenters can be seen in Figure 2 and is followed by data sheets containing information and individual events that occurred during the quarter.

References

Bollinger, G. A., and E. Mathena (1983). Seismicity of the southeastern United States, Southeastern U.S. Network Bulletin, 11, May 1983.

Bollinger, G. A., M. C.Chapman, and M. S. Sibol (1984). Virginia Regional Seismic Network, 77-134-27, June 1984, Dept. of Geological Sciences--Extension Division, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061.

Table 1. Station Coverage, 1 July 1985 - 30 September 1985

Station	Percent Coverage (%)	Station	Percent Coverage (%)
BKA	87.4	IVA	43.1
HGA	44.7	BEV	76.6
HVA	62.0	CHF	23.9
OCA	57.6	CH6	93.3
TSA	59.8	LDV	60.0
TDA	53.7		
MLA	58.3		
TLT	70.7		
RCT	99.1		
RHT	68.1		
DCT	98.0		
CBT	70.8		
TVG	77.4		
CDG	52.2		
DALG	49.1		
ETG	15.3		

Note: The coverage of CBT(NS), CBT(EW), OCA(NS), and OCA(EW) are dropped because only the vertical component is recorded continuously. However, all the three-components are monitored by a digital event recorder. Also, OCA was expanded to three components on August 24, 1985, and ETG was reinstalled on September 5, 1985.

The low percent coverage was caused by unusually heavy thunderstorm activity which caused excessive lightning damage.

Table 2. Coodinates of Stations Used in Locating the Events in this Report

Station	Latitude	Longitude	Elevation (km)
CBT	35.5394	84.4206	.3566
DCT	35.0542	84.4194	.5075
RCT	35.3453	84.6613	.265
RHT	35.0781	84.8825	.2987
TVG	34.3771	85.3023	.3231
HGA	34.2602	85.8464	.3840
OCA	34.6138	86.4352	.2499
TLT	35.3011	84.2833	.5121
DALG	34.7755	85.0137	.4572

Table 3. Events Detected but Not Located

July 5	07:24	IVA	P	07:24:31.2	Regional event
			S	07:24:47.0	
		BEV	P	07:24:30.2	
			S	07:24:45.0	
		LDV	P	07:24:31.0	
			S	07:24:46.0	
July 5	05:19	HVA	P	05:19:23.0	Possible blast
			S	05:19:27.0	
		HGA	P	05:19:43.0	
			S	05:19:50.5	
		TSA	P	05:19:30.85	
			S	05:19:41.00	
		BKA	S	05:19:43.8	
Sept. 11	17:50	ETG	P	17:50:35.2	
			S	17:50:40.3	
Sept. 14	08:33	ETG	P	08:33:23.4	
			S	08:23:27.0	

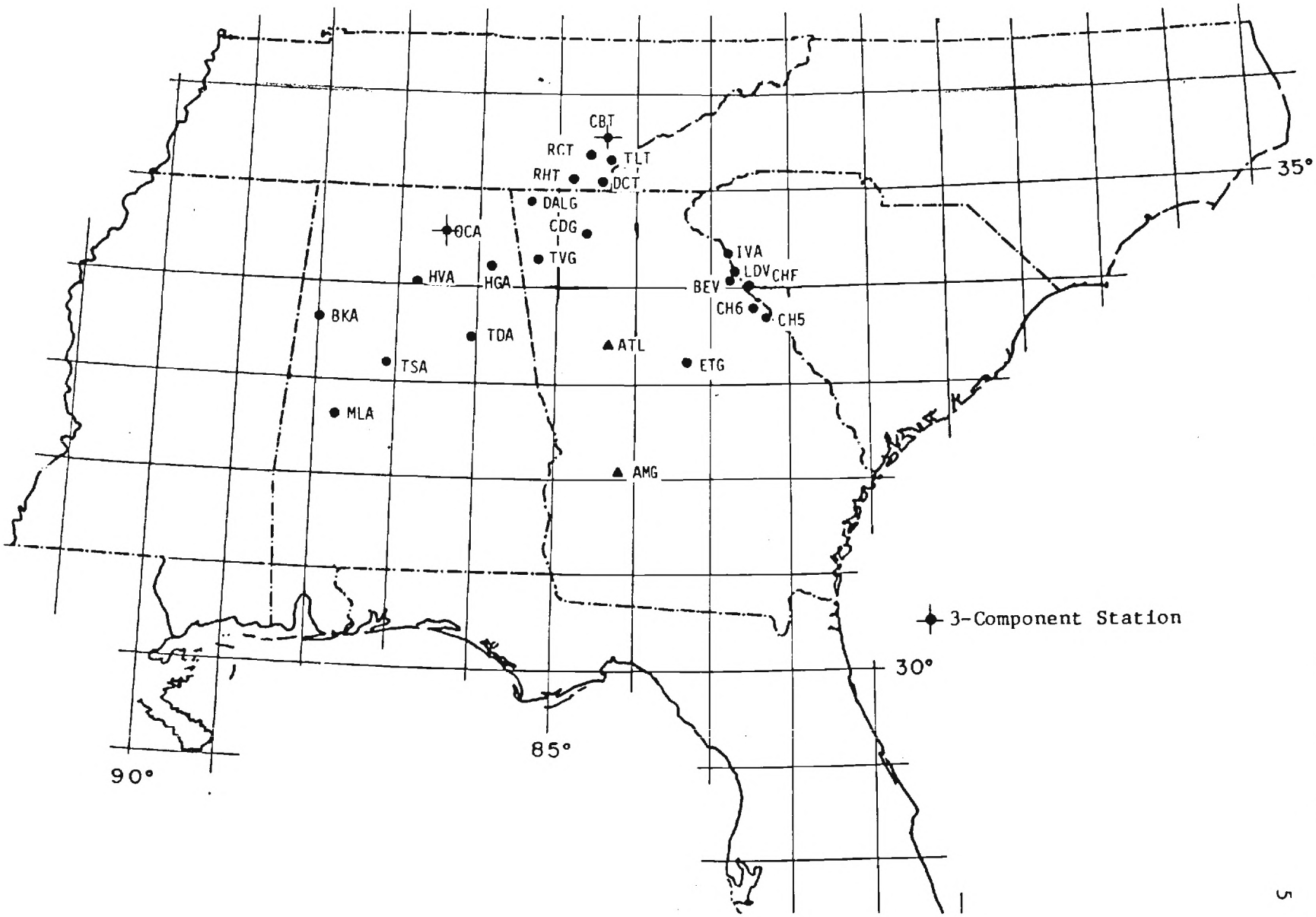

Figure 1. Seismic stations maintained by Georgia Tech as of September 1985.

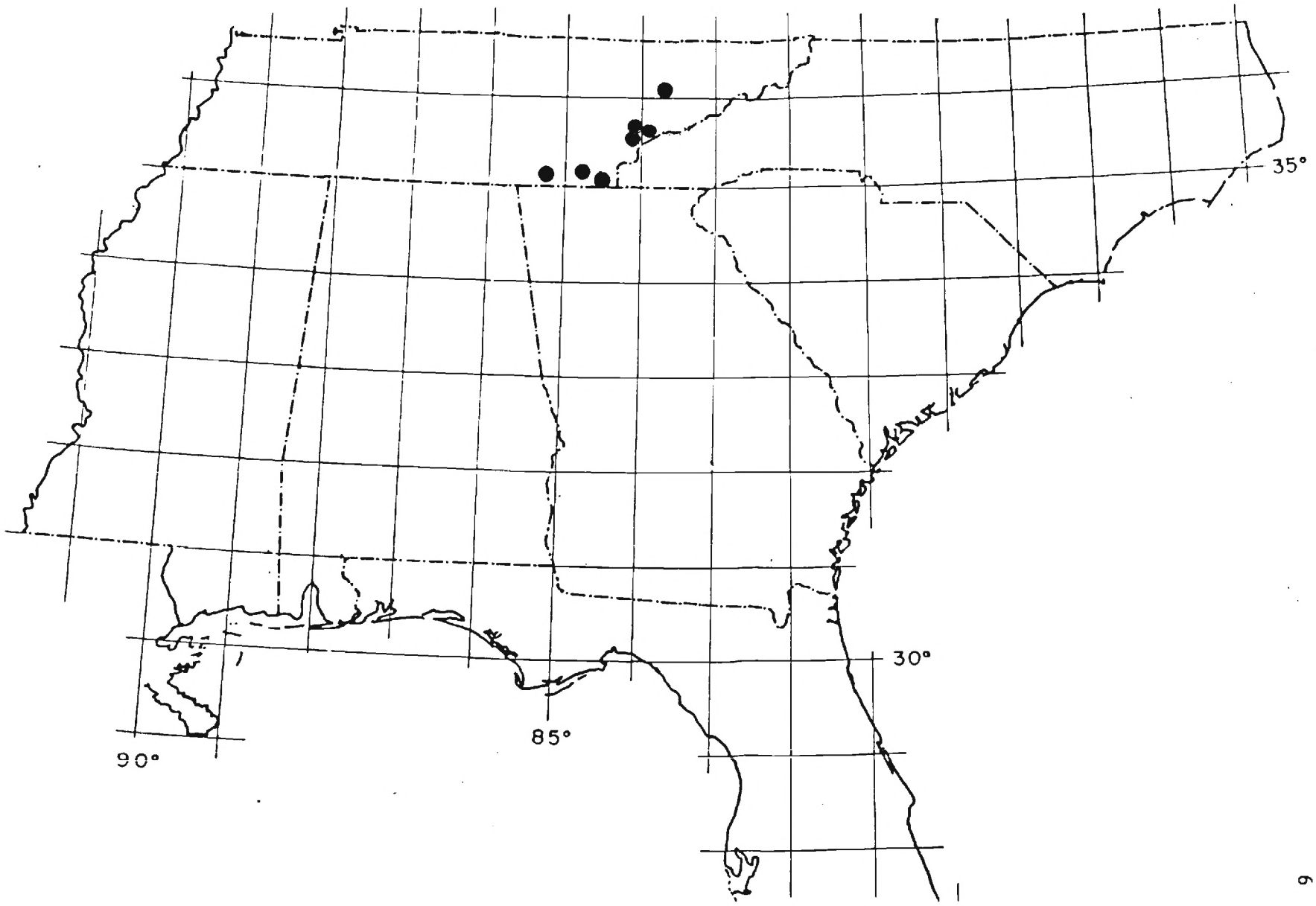

Figure 2. Epicenters from July 1, 1985 to September 30, 1985.

12 July 1985, Chickamauga Lake, Tennessee

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
850712	18 20 28.25	35.244	85.166	19.65	3.0	.42	.13

MNAX	MJAX	AZ	AREA
.089	.140	24.7	.039

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	DIST	AZ	DURATION
RCT	P	18	20	36.65	.09	.10	S	18	20	42.35	-.29	.10	47.3	76.3	
DCT	P	18	20	40.20	-.03	.10	S	18	20	48.90	-.10	.10	71.4	107.2	
HGA	P	18	20	48.70	-.04	.10	S	18	21	3.75	.00	.10	125.8	209.8	
OCA	P	18	20	50.10	-.19	.10	S	18	21	6.50	.06	.10	135.7	239.0	

15 August 1985, Chilhowee Mtn., Tennessee

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
850815	17 31 53.02	35.668	83.957	16.50	1.8	.51	.33

MNAX	MJAX	AZ	AREA
.245	.303	163.1	.233

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	DIST	AZ	DURATION
CBT	P	17	32	.80	.05	.10	S	17	32	6.80	.39	.10	44.4	251.3	
TLT	P	17	32	1.80	.15	.10	S	17	32	7.70	-.27	.10	50.3	216.1	
RCT	P	17	32	5.00	-.23	.10	S	17	32	14.00	-.18	.10	73.3	240.8	
DCT	P	17	32	6.00	-.29	.10							80.1	211.8	
DALG							S	17	32	32.10	.13	.10	138.4	224.4	
TVG							S	17	32	46.50	.74	.10	189.2	220.8	

22 August 1985, South of Ocoee River, Tennessee

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
850822	17 54 14.62	35.093	84.564	10.29	.7	.00	.57

MNAX	MJAX	AZ	AREA
.019	.810	44.7	.048

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	DIST	AZ	DURATION
DCT	P	17	54	17.90	.41	.10	S	17	54	20.30	.70	.10	13.9	107.9	42.
RCT	P	17	54	19.35	-.42	.10							29.4	342.5	23.
TLT	P	17	54	20.05	-.52	.10							34.5	47.9	20.
CBT	P	17	54	23.00	-.22	.10							51.2	14.7	21.
DALG	P	17	54	22.80	-.89	.10							54.1	229.6	32.

23 August 1985, Ocoee, Tennessee

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
850823	7 56 34.11	35.193	84.736	15.27	.9	.68	.27

MNAX	MJAX	AZ	AREA
.003	.280	44.8	.003

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	DIST	AZ	DURATION
RCT	P	7	56	37.80	-.20	.10	S	7	56	41.00	.15	.10	18.2	21.9	38.
DCT	P	7	56	40.45	.43	.10							32.7	118.4	60.
TLT							S	7	56	47.15	.15	.10	42.9	73.8	20.
CBT	P	7	56	42.30	-.01	.10	S	7	56	47.80	-.52	.10	47.8	36.6	21.
DALG	P	7	56	42.90	-.18	.10							52.8	208.9	35.
TVG							S	7	57	3.80	.01	.10	104.4	209.9	26.

25 August 1985, Trentville, Tennessee

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
850825	1 52 47.54	36.051	83.675	17.49	1.5	.32	.30

MNAX	MJAX	AZ	AREA
.007	8.965	.0	.210

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	DIST	AZ	DURATION
CBT	P	1	53	2.00	-.14	.10	S	1	53	12.40	-.43	.10	88.4	230.0	
TLT	P	1	53	4.00	.04	.10	S	1	53	15.90	-.09	.10	99.9	213.6	
RCT							S	1	53	20.95	-.27	.10	119.1	228.9	
DCT	P	1	53	8.40	-.26	.10	S	1	53	24.00	-.14	.10	129.8	211.5	
DALG							S	1	53	40.00	.31	.10	187.2	220.9	
TVG							S	1	53	53.95	.58	.10	238.5	218.9	

17 September 1985, Tallassee, Tennessee

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
850917	16 25 8.11	35.499	84.066	16.90	1.8	.59	.27

MNAX	MJAX	AZ	AREA
.033	.214	49.9	.022

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	DIST	AZ	DURATION
TLT	P	16	25	13.60	-.07	.10	S	16	25	17.90	.17	.10	29.5	221.9	35.
CBT	P	16	25	14.00	-.08	.10	S	16	25	18.00	-.46	.10	32.5	277.8	65
RCT	P	16	25	18.00	.26	.10	S	16	25	25.25	.45	.10	56.7	252.4	95.
DCT	P	16	25	17.95	-.14	.10	S	16	25	25.20	-.20	.10	58.9	213.1	90.
RHT	P	16	25	23.00	.37	.10	S	16	25	33.20	-.07	.10	87.9	237.9	55.
DALS	P	16	25	27.00	-.40	.10	S	16	25	41.50	-.04	.10	118.1	227.2	65.

24 September 1985, North of Tallassee, Tennessee

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
850924	0 1 13.02	35.687	84.050	16.71	1.7	.15	.24

MNAX	MJAX	AZ	AREA
.154	.183	91.4	.088

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	DIST	AZ	DURATION
CBT	P	0	1	19.90	.19	.10	S	0	1	24.95	.34	.10	37.4	244.0	45.
TLT	P	0	1	21.10	-.17	.10	S	0	1	27.20	-.11	.10	47.7	206.3	40.
RCT	P	0	1	24.00	-.29	.10	S	0	1	32.05	-.49	.10	67.2	235.7	95.
DCT	P	0	1	26.00	.05	.10	S	0	1	35.40	-.03	.10	77.8	205.6	80.
RHT							S	0	1	42.00	.07	.10	101.6	228.4	55.
TVG	P	0	1	43.10	.24	.10	S	0	2	5.00	.27	.10	185.4	218.4	65.

GEORGIA INSTITUTE OF TECHNOLOGY

QUARTERLY EARTHQUAKE BULLETIN

1 October 1985 - 31 December 1985

By

Leland Timothy Long, Karl-Heinz Zelt, Jeih-San Liow,

Robert M. Duckworth, An Tie, Mitchell S. Craig,

Michael Page, and Andreas Georgiopoulos

School of Geophysical Sciences

Earth Sciences Division

Supported by:

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The events are located using a computer program with techniques similar to those used in HYPO71 but is more flexible in assigning weights and utilizing phases.

Magnitudes are defined by their duration according to the equation:

$$m_b(Lg)_{Dur} = -3.45 + 2.85 \log_{10} T ,$$

where T is the mean signal duration in seconds (from Bollinger et al., 1984). A map showing the epicenters can be seen in Figure 2 and is followed by data sheets containing information and individual events that occurred during the quarter.

References

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Bollinger, G. A., M. C.Chapman, and M. S. Sibol (1984). Virginia Regional Seismic Network, 77-134-27, June 1984, Dept. of Geological Sciences--Extension Division, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061.

Table 2. Coodinates of Stations Used in Locating the Events in this Report

Station	Latitude	Longitude	Elevation (km)
CBT	35.5394	84.4206	0.3566
DCT	35.0542	84.4194	0.5075
RCT	35.3453	84.6613	0.265
RHT	35.0781	84.8825	0.2987
TVG	34.3771	85.3023	0.3231
TLT	35.3011	84.2833	0.5121
DALG	34.7755	85.0137	0.4572
BG3*	34.9930	82.9316	---
LPM*	34.9791	83.0243	---
SMT*	34.9308	82.9710	---
LDV	34.1479	82.6833	0.1615
CH6	33.8938	82.5291	0.1295
CRTN***	36.200	83.8410	0.488
HPK**	35.9260	83.8796	0.3048
TKL***	35.6581	83.7742	0.3500
GBTN***	35.6661	84.2108	0.3260

* U.S.G.S./Univ. of South Carolina seismic stations

** TVA seismic stations

*** TEIC seismic stations

Table 4. Possible Events Located

11 November	18:39	OCA	P	18:39:55.1	Possible
			S	18:40:00.4	blast near Scottsboro,
		CBT	S	18:40:35.0	Alabama
		TVG	P	18:40:00.5	
		DCT	P	18:40:12.0	
09 December	19:45	CH6	P	19:45:53.5	Possible
			S	19:45:55.3	blast near Richard B.
		IVA	P	19:45:53.0	Russell
			S	19:45:55.9	Reservoir
		BEV	S	19:46:00.5	
		LDV	P	19:45:55.0	
			S	19:45:59.0	
11 December	11:05	BEV	P	11:05:42.6	Possible
			S	11:05:43.8	road blast
		CH6	P	11:05:44.6	
			S	11:05:47.0	
		LDV	P	11:05:42.3	
		DCT	P	11:06:13.0	
			S	11:06:36.4	
12 December	05:09	CH6	P	05:09:50.0	Possible
			S	05:09:56.0	earthquake near
		LDV	P	05:09:47.85	Richard B.
			S	05:09:51.85	Russell Reservoir
		BEV	P	05:09:48.7	
			S	05:09:53.0	
		TVG	S	05:10:47.0	
		RCT	S	05:10:38.8	
		RHT	S	05:10:39.2	
		DCT	P	05:10:09.1	
			S	05:10:28.0	

(Continued)

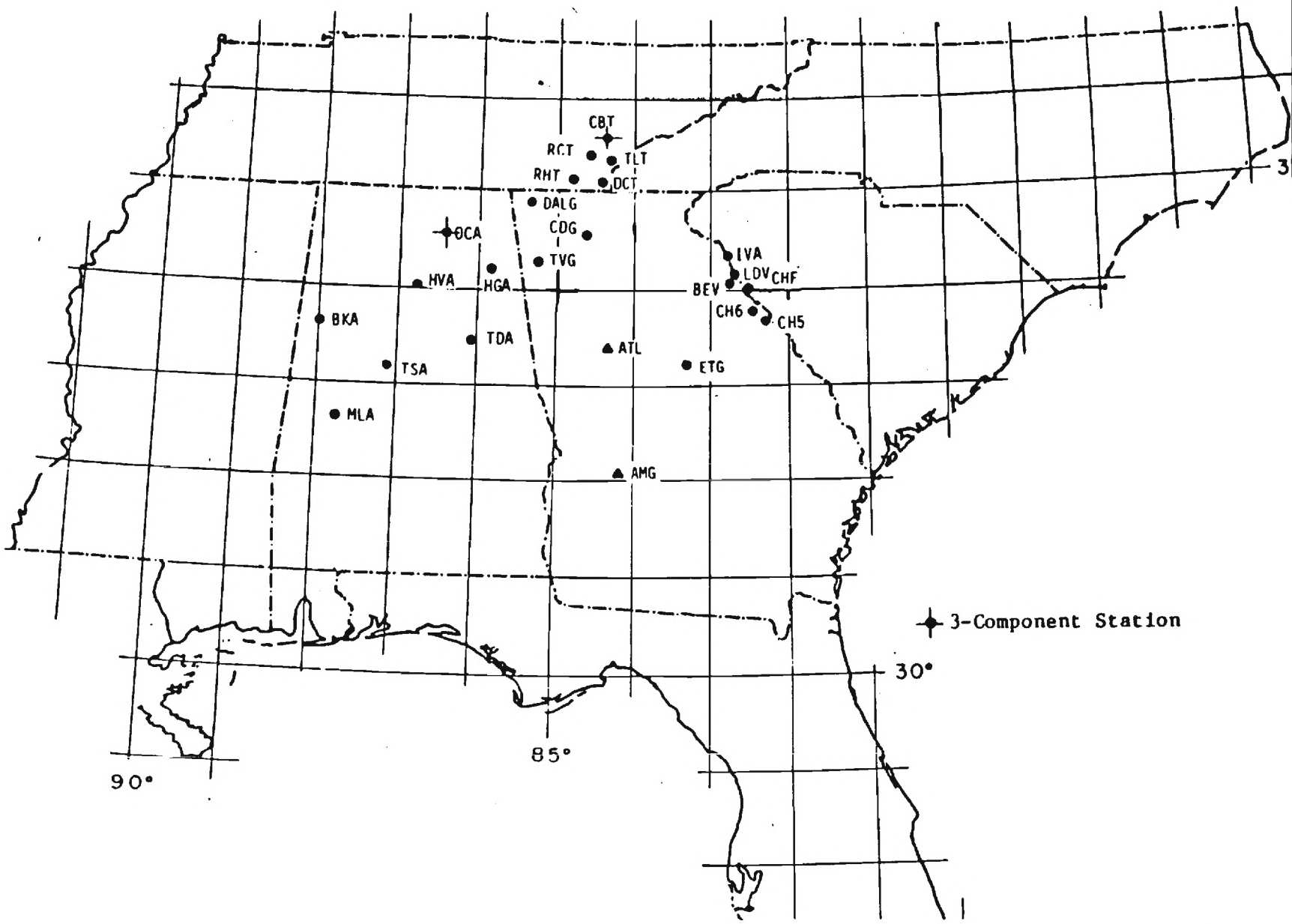

Figure 1. Seismic stations maintained by Georgia Tech as of September 1985.

18 October 1985, Lake Jocassee, South Carolina

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
851018	1 45 29.85	35.085	82.924	4.85	1.9	.01	1.00

MNAX	MJAX	AZ	AREA
.758	1.179	157.9	2.807

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
BG3	P	1	45	31.70	-.07	.1	S	1	45	33.06	-.12	.1	-.01	10.2	183.7	85.
LPM	P	1	45	31.91	-.59	.1	S	1	45	33.42	-1.02	.1	-.01	14.9	217.9	85.
SMT	P	1	45	32.67	-.27	.1	S	1	45	34.72	-.48	.1	.02	17.6	194.0	85.
LDV	P	1	45	47.60	.21	.1								106.3	167.9	95.
DCT	P	1	45	52.00	-.26	.1	S	1	46	9.80	1.11	2.0	.00	136.4	268.6	85.
CH6							S	1	46	10.80	1.93	.1		137.1	164.5	60.
DALG							S	1	46	27.00	2.30	.1		194.3	259.8	48.
TVG	P	1	46	7.50	.03	.1								232.4	250.3	55.

5 November 1985, Jefferson City, Tennessee

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
851105	0 59 28.51	36.354	83.596	16.94	1.3	.51	.28

MNAX	MJAX	AZ	AREA
.171	.818	147.0	.439

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
CRTN	P	0	59	33.94	.10	.1	S	0	59	37.84	.10	.1	.10	27.9	232.1	50.
HPK	P	0	59	37.20	-.51	.1	S	0	59	44.20	-.26	.1	-.87	53.9	208.2	50.
TKL	P	0	59	41.81	.20	.1	S	0	59	51.61	.40	.1	-.09	78.9	191.8	50.
CBT	P	0	59	47.90	.23	.1	S	1	0	2.00	.29	.1	.13	117.3	219.6	70.
RCT							S	1	0	10.30	.22	.1		148.0	220.9	30.
DCT	P	0	59	54.85	.06	.1	S	1	0	13.60	-.45	.1	.73	162.6	207.5	65.
RHT							S	1	0	19.50	-.29	.1		183.9	219.6	40.
TVG							S	1	0	42.50	-.04	.1		269.7	215.6	30.

7 December 1985, Anwick, Tennessee

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
851207	4 45 59.60	35.728	84.093	20.93	1.7	.31	.36

MNAX	MJAX	AZ	AREA
.320	1.603	142.5	1.609

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
RCT	P	4	46	10.90	-.02	.1	S	4	46	19.00	-.22	.1	.23	66.9	230.6	50.
DCT	P	4	46	12.75	-.27	.1	S	4	46	22.70	-.15	.1	-.44	80.5	201.7	90.
RHT	P	4	46	16.00	-.35	.1	S	4	46	29.00	.38	2.0	.00	101.9	224.9	50.
TVG	P	4	46	30.00	.48	.1	S	4	46	52.10	.65	.1	.21	186.6	216.6	60.

20 December 1985, Tennga, Georgia

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
851220	15 15 6.61	34.928	84.758	9.26	2.9	.24	.08

MNAX	MJAX	AZ	AREA
.100	.127	167.5	.040

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
RHT	P	15	15	10.23	-.07	.1	S	15	15	13.08	.08	.1	-.27	20.2	325.6	155.
DCT	P	15	15	12.49	.06	.1	S	15	15	16.56	-.13	.1	.32	33.9	65.6	190.
RCT	P	15	15	14.57	.03	.1	S	15	15	20.43	.08	.1	-.05	47.1	10.7	162.

22 December 1985, Gregory Bald Mountain, North Carolina

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
851222	0 56 5.07	35.695	83.742	15.00	3.1	.16	.18

MNAX	MJAX	AZ	AREA
.126	.253	114.9	.100

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
HPK	P	0	56	10.40	-.08	.1	S	0	56	14.20	-.18	.1	.14	28.4	334.3	240.
GBTN	P	0	56	12.70	.07	.1	S	0	56	18.20	.10	.1	.12	42.5	265.7	280.
CBT	P	0	56	16.15	.14	.1	S	0	56	24.30	.35	.1	-.05	63.9	254.3	188.
RCT	P	0	56	20.54	-.01	.1	S	0	56	31.80	-.02	.1	.09	92.1	245.1	190.
DCT	P	0	56	20.73	-.16	.1								94.2	221.0	195.
RHT	P	0	56	25.48	-.31	.1	S	0	56	40.64	-.25	.1	-.30	124.5	236.6	180.
TVG	P	0	56	39.00	.17	.1								204.8	224.5	175.

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RCT	35.3453	84.6613	0.265
RHT	35.0781	84.8825	0.2987
TVG	34.3771	85.3023	0.3231
TLT	35.3011	84.2833	0.5121
LDV	34.1479	82.6833	0.1615
CH6	33.8938	82.5291	0.1295
TKL**	35.6581	83.7742	0.3500
GBTN**	35.6661	84.2108	0.3260
ETG	33.2912	84.4550	0.588
RICH**	35.9192	82.8188	0.966
GMG**	34.8627	84.6703	1.097
TDA	33.5417	86.0247	0.1814
ATL	33.4333	84.3375	0.272
BHT**	35.8470	84.9450	0.8260
BEV	34.0893	82.7334	0.1584
HGA	34.2602	85.8464	0.3840
WSSR**	35.2778	83.5780	1.390
HVA	34.0264	86.7692	0.1951
OCA	34.6138	86.4352	0.2499
CHF	34.0247	82.5867	0.1520
PRM*	34.0833	82.3633	0.2540
IVA	34.2721	82.7460	0.1676

* U.S.G.S./Univ. of South Carolina seismic stations

** TEIC seismic stations

Table 3. Lake Sinclair, Georgia, Microseismicity (detected, but not located) — [Continued]

13 Mar 1986	ETG	P 02:41:55.0	Microearthquake	Dur: 25 sec
		S 02:41:56.1		
	ETG	P 02:50:39.8	Microearthquake	Dur: 25 sec
		S 02:50:40.9		
16 Mar 1986	ETG	P 11:20:04.2	Microearthquake	Dur: 5 sec
	ETG	P 11:51:11.9	Microearthquake	Dur: 2 sec
24 Mar 1986	ETG	P 09:57:	Microearthquake	Dur: 2 sec
	ETG	P 12:30:	Microearthquake	Dur: 3 sec

Table 6. Possible Richard B. Russell Events

29 January 1986 — Foreshock

Origin Time: 08:17:11.66 ± 0.170
Latitude: 34.0626° ± 0.664 km
Longitude: 82.6409° ± 0.870 km
Depth: 1 km
Magnitude: -2

BEV	S-P	1.1 sec	Duration:	10 sec
CH6	S-P	2.8 sec	Duration:	10 sec

PRM	P	08:17:16.4
	S	08:17:20.0

- -

29 January 1986 — Main Shock

Origin Time: 08:17:23.16 ± 0.174
Latitude: 34.0203° ± 0.722 km
Longitude: 82.7006° ± 0.644 km
Depth: 1 km
Magnitude: 1.3

BEV	S-P	1.0 sec	Duration:	45 sec
CH6	S-P	2.7 sec	Duration:	46 sec

JSC	P	08:17:46.0	Duration:	50 sec
PRM	P	08:17:29.0	Duration:	50 sec

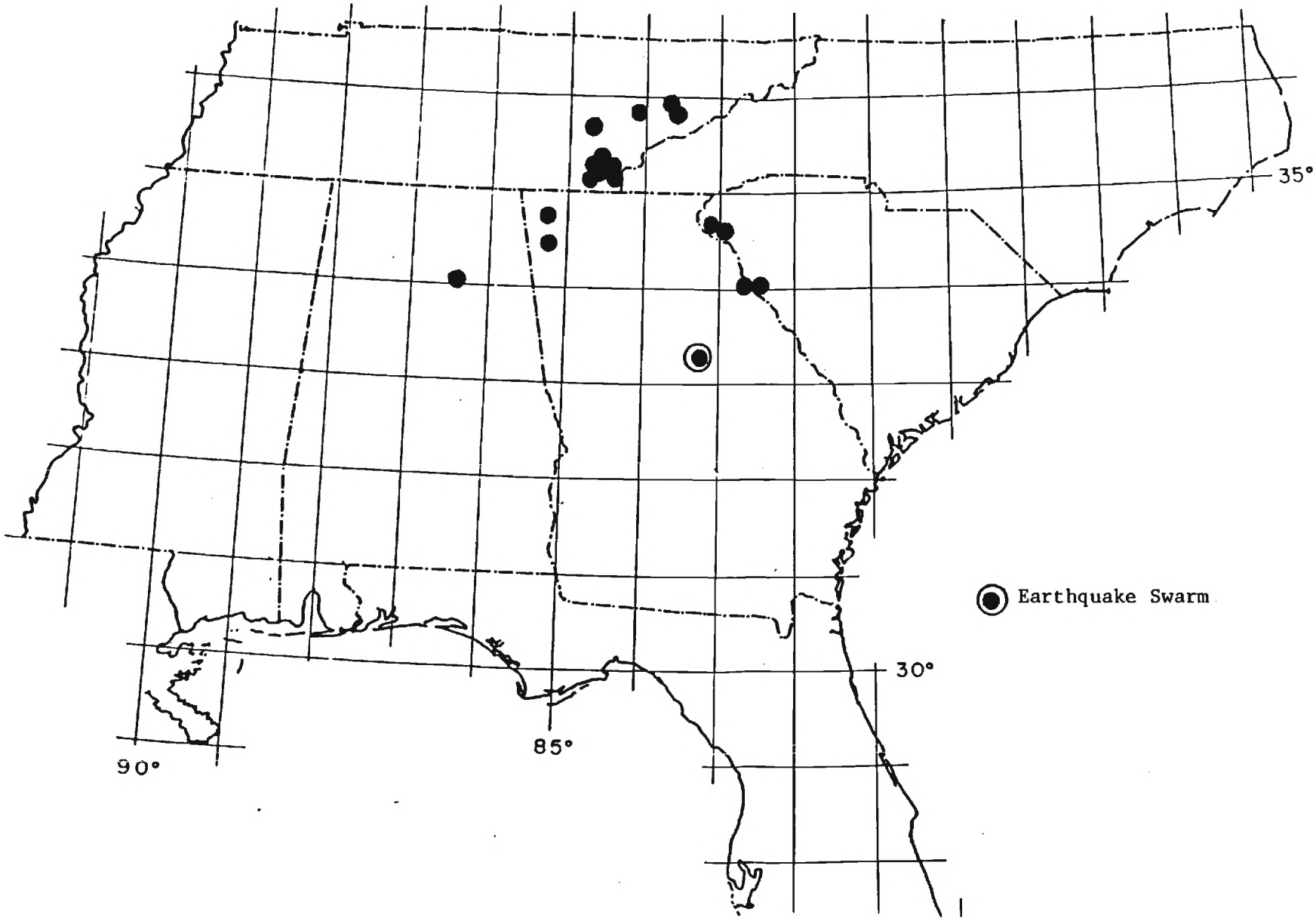

Figure 2. Epicenters from January 1, 1986 to March 31, 1986.

11 January 1986, Richard B. Russell Reservoir, South Carolina

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860111	3 10 12.49	34.073	82.622	1.00	.0	.10	.09

MNAX	MJAX	AZ	AREA
.090	.201	43.5	.057

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
LDV	P	3	10	14.20	-.08	.1	S	3	10	15.50	-.09	.1	-.06	10.0	325.6	15.
BEV	P	3	10	14.40	.05	.1	S	3	10	15.70	-.01	.1	.14	10.4	279.7	15.
CH6	P	3	10	16.10	-.11	.1	S	3	10	18.80	-.13	.1	-.07	21.7	156.7	20.

12 January 1986, Trion, Georgia

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860112	1 35 30.88	34.478	85.268	17.26	1.4	.46	.48

MNAX	MJAX	AZ	AREA
.357	1.197	137.3	1.344

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
TVG	P	1	35	34.10	-.18	.1	S	1	35	36.90	.14	.2	-.61	11.6	195.7	50.
HGA	P	1	35	41.00	.21	.1	S	1	35	48.10	.04	.2	.42	58.5	245.6	25.
RHT	P	1	35	43.30	-.13	.1	S	1	35	52.50	-.12	.2	-.15	75.3	27.8	35.
DCT	P	1	35	47.90	.52	.1	S	1	35	59.90	.44	.2	.63	100.4	50.4	60.
RCT	P	1	35	48.90	-.13	.1	S	1	36	2.30	-.03	.2	-.29	110.9	29.8	55.
WSSR	P	1	35	59.20	-.29	.2	S	1	36	19.00	-1.45	2.0	.00	177.5	60.0	71.

17 January 1986, Turtletown, Tennessee

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860117	0 46 .66	35.194	84.392	11.41	1.1	.36	.15

MNAX	MJAX	AZ	AREA
.202	.253	24.1	.160

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
DCT	P	0	46	3.95	.08	.1	S	0	46	6.10	-.13	.2	.36	15.7	189.3	60.
RCT	P	0	46	5.90	-.01	.1	S	0	46	10.00	.24	.2	-.36	29.7	304.3	30.
CBT							S	0	46	11.90	-.19	.2		38.4	356.1	30.
RHT							S	0	46	14.20	-.13	.2		46.6	254.0	40.

2 February 1986, Ocoee, Tennessee

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860202	22 19 36.61	35.114	84.713	18.63	1.0	.14	.19

MNAX	MJAX	AZ	AREA
.249	.322	125.0	.252

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
RHT	P	22	19	40.45	-.16	.1	S	22	19	43.35	-.19	.1	-.12	16.0	255.4	30.
RCT	P	22	19	42.00	.18	.1	S	22	19	45.80	.16	.1	.20	26.0	10.4	35.
DCT	P	22	19	42.00	-.03	.1	S	22	19	46.00	-.01	.1	-.08	27.6	104.0	40.
TVG	P	22	19	53.10	.35	.1								98.1	213.5	38.

13 February 1986, Lake Keowee, South Carolina

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860213	11 35 46.92	34.708	82.992	2.00	2.9	.68	.28

MNAX	MJAX	AZ	AREA
.224	.785	29.7	.553

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
LDV	P	11	35	58.20	-.06	.1	S	11	36	6.90	.32	.1	-.60	68.3	155.4	160.
BEV	P	11	35	59.10	.14	.1	S	11	36	7.90	.11	.1	.16	72.6	160.8	160.
CHF	P	11	36	1.30	.42	.1	S	11	36	11.10	-.02	.2	.99	84.5	153.7	130.
PRM	P	11	36	1.30	-.53	.1								90.4	140.1	175.
DCT	P	11	36	8.80	-.34	.1	S	11	36	25.50	.07	2.0	.00	135.8	286.4	240.

13 February 1986, Lake Keowee, South Carolina

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860213	17 33 36.80	34.759	83.023	2.00	1.2	.28	.66

MNAX	MJAX	AZ	AREA
.455	1.339	24.0	1.911

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
IVA	P	17	33	48.00	.31	.1	S	17	33	56.00	.71	.1	.28	59.7	154.7	50.
LDV	P	17	33	50.80	.40	.1								74.7	155.2	35.
BEV	P	17	33	51.00	-.18	.1	S	17	34	1.60	.39	.1	-.28	78.9	160.2	55.
CHF	P	17	33	53.00	-.34	.1								90.9	153.7	45.
CH6	P	17	33	56.40	.26	.1								106.3	154.5	42.
DCT	P	17	34	1.40	.67	.1								131.5	284.4	50.
ETG							S	17	34	26.40	-1.54	.2		165.6	190.6	33.

28 February 1986, Lake Sinclair, Georgia

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860228	6 36 7.60	33.231	83.306	1.00	2.0	.26	.44

MNAX	MJAX	AZ	AREA
.319	.521	145.0	.521

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
ETG	P	6	36	9.12	.06	.1	S	6	36	10.50	.37	.2	-.37	7.9	328.0	85.
CH6	P	6	36	24.80	.18	.1	S	6	36	37.20	.10	.2	.26	102.8	44.3	100.
BEV	P	6	36	25.50	-.11	.1	S	6	36	38.40	-.42	.2	.28	108.9	29.0	65.
CHF	P	6	36	25.80	-.04	.1	S	6	36	39.00	-.21	.2	.17	110.3	37.0	67.
LDV	P	6	36	26.30	-.60	.1	S	6	36	40.00	-1.04	.2	-.02	116.8	29.4	80.
TDA	P	6	36	48.40	-.43	.1	S	6	37	18.50	-.54	.2	-.32	254.9	277.8	80.

28 February 1986, Lake Sinclair, Georgia

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860228	8 4 43.39	33.297	83.441	5.55	.1	.00	.58

MNAX	MJAX	AZ	AREA
.787	1.871	113.6	4.627

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
ETG	P	8	4	45.10	.00	.1	S	8	4	46.35	.00	.2	.00	8.4	94.3	22.
CH6	P	8	5	1.10	.03	.1	S	8	5	12.60	-1.42	2.0	.00	107.2	51.9	30.
CHF	P	8	5	2.00	.02	.1	S	8	5	15.50	-.11	2.0	.00	112.9	44.3	0.

28 February 1986, Lake Sinclair, Georgia

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860228	8 37 41.51	33.229	83.315	1.00	1.1	.56	.57

MNAX	MJAX	AZ	AREA
.501	1.065	151.6	1.678

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
ETG	P	8	37	42.60	-.39	.1	S	8	37	43.85	-.22	.1	-.62	7.7	334.5	40.
CH6	P	8	37	58.20	-.43	.1	S	8	38	10.20	-.98	.2	.30	103.6	44.6	60.
CHF	P	8	37	59.50	-.34	.1	S	8	38	12.50	-.77	.2	.23	111.0	37.3	30.
LDV	P	8	38	1.50	.62	.1	S	8	38	15.50	.42	.2	.86	117.4	29.8	30.

1 March 1986, Turtletown, Tennessee

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860301	3 51 58.61	35.181	84.342	19.44	.3	.33	.10

MNAX	MJAX	AZ	AREA
.129	.215	22.0	.087

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
DCT	P	3	52	2.60	-.08	.1	S	3	52	5.80	.14	.1	-.39	15.7	206.8	30.
RCT	P	3	52	5.00	-.02	.1	S	3	52	9.70	-.01	.1	-.03	34.3	302.1	15.
CBT	P	3	52	6.00	.11	.1	S	3	52	11.10	-.13	.1	.42	40.4	349.8	15.

5 March 1986, Lake Sinclair, Georgia

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860305	8 10 50.72	33.351	83.326	***1.00***	1.5	.25	.48

MNAX	MJAX	AZ	AREA
.400	1.140	143.0	1.434

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
ETG	P	8	10	51.80	-.48	.1	S	8	10	52.80	-.57	.2	-.29	7.0	199.0	70.
CH6	P	8	11	7.70	-.36	.1	S	8	11	19.90	-.25	.2	.31	95.2	50.8	60.
CHF	P	8	11	9.00	-.15	.1	S	8	11	22.40	.39	.2	-.03	101.3	42.4	50.
LDV	P	8	11	10.00	-.10	.2								106.5	33.8	50.
DCT							S	8	11	55.70	-.98	.5		213.6	332.2	50.

6 March 1986, Lake Sinclair, Georgia

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860306	22 39 24.50	33.351	83.232	***1.00***	1.0	.00	.89

MNAX	MJAX	AZ	AREA
1.409	2.462	122.4	10.897

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
ETG	P	22	39	26.00	-.83	.1	S	22	39	27.10	-1.44	.1	.00	12.9	239.0	45.
BEV							S	22	39	51.80	.40	.2		93.9	29.3	30.
TVG							S	22	40	27.40	.54	.2		221.8	300.8	30.

31 March 1986, Richard B. Russell Reservoir, South Carolina

DATE	ORIGIN TIME	LAT N	LONG W	DEPTH	MAG	SDTO	MRES
860331	1 54 45.44	34.030	82.597	1.00	.6	.16	.25

MNAX	MJAX	AZ	AREA
.219	.715	38.2	.493

STN	PHASE	HR	MN	SEC	RES	WT	PHASE	HR	MN	SEC	RES	WT	OTVAR	DIST	AZ	DURATN
BEV	P	1	54	47.90	-.11	.1	S	1	54	49.55	-.34	.1	.21	14.2	297.4	20.
LDV	P	1	54	48.00	-.21	.1	S	1	54	50.00	-.22	.1	-.17	15.3	328.5	28.
CH6	P	1	54	48.20	-.21	.1	S	1	54	50.25	-.33	.1	-.04	16.4	157.5	30.